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JOHN JAMES WEPFER, A RENAISSANCE STUDENT OF APOPLEXY.[1]

By John E. Donley, M. D., Providence, R. I.

A man who does not know what has been thought by those who have gone before him is sure to set an undue value upon his own ideas.—*Mark Pattison, Memoirs, 78.*

In that pleasing volume, Renaissance Types, Mr. W. S. Lilly remarks: "I remember one of the most accomplished scholars it has been my good fortune to meet saying, that in investigating the past the problem is to extract general history from individual histories; or to quote his own words, 'zu finden die allgemeine Geschichte in Einzelndarstellungen.' I think that is profoundly true. History has been called the essence of innumerable biographies. The vast majority of them, of course, tell the same monotonous tale. But in the lives of great men the spirit of the age in which they worked is, in some sort, incarnate and so may be most fruitfully studied. Cicero, in a well-known passage, speaks of them as luminaries in the world's career. So they are. And they radiate light on their times. They see by the illumination of genius which is in them; and in their light we may see light." These words of the accomplished author written by him of history in general, I would apply to the lives and writings of great physicians; for in its own special way the history of medicine, relating, as it does, a part of the story of the organic life of humanity, is quite as expressive of the moral, intellectual and, I had almost said, even religious life of an age or of a people, as are its cathedrals, its paintings, its sculpture, its poetry or its political institutions. Each of these partially and all of them in greater degree do but mirror forth in visible expression the collective consciousness that produced them. And hence it is only when we study illustrious physicians as types, living and working and striving, sometimes succeeding, many times failing, in the actual world of their own time and place, that we are enabled to breathe their contemporary spirit, and to catch, in some fashion, the collective medical mind in its manywise complex and most characteristic expression.

If as someone has so aptly said, the thirteenth century was the Maytime of politics, religion and the arts of life, certainly the seventeenth century was the Maytime of science and of medicine. Vigorous, enthusiastic, conscious, sometimes perhaps too conscious of its new-found strength and freedom, it set about its work of destruction and reconstruction with the gay, lightheartedness of youth. It was indeed a Renaissance. But free as it was in spirit, it still paid tribute to its dead masters in the years that had gone before. And not anywhere more intensely than in this seventeenth century may we observe the fierce antagonism of opposing principles and tendencies. Here is the principle of tradition and outward authority contending with the spirit of free inquiry born of the Renaissance; here are prejudice, habit, superstition even, going hand in hand with scientific experimentation; here again, the conjectures of one man rapidly become the conclusions of the next

[1] Read before the Johns Hopkins Hospital Historical Club of Baltimore, October 12, 1908.

and are made the axioms of the third. From the second to the ninth decade of this fruitful period lived John James Wepfer, one of the most illustrious physicians of his time, a man whose eyes were the eyes of Vesalius, whose spirit was the spirit of Harvey, but upon whose imagination the bright images were etched by the pale ghost of Galen.

The seventeenth century I have ventured to call the May-time of science and of medicine, for such in truth it was. And what a burst of genius was here! Let us try to appreciate the general characteristics of this marvellous era of the Renaissance, devoted to "good learning," as Erasmus says, when modern man re-discovering his humanity, and becoming self-conscious of his latent capabilities, sowed that seed from which we have reaped a most luxuriant harvest. The long period of the Middle Ages, those ages shot through and through with burning faith and filled with prophetic intimations of the life to come, was drawing to its close; the ideas and ideals which had long occupied the minds and inspired the actions of men, were losing somewhat of their oldtime appeal and vigor. Then Constantinople fell. Suddenly Europe was brought into communion with the reincarnated civilization of ancient Greece. Scholasticism, that wonderfully compact, ingenious and necessarily rigid system of theology and philosophy, the intellectual embodiment of medieval man's conception of his relations to God, to nature and to his fellowman, no longer sufficed as the chief and adequate expression of human faith and knowledge. Consequent upon the enthusiastic study and imitation of the philosophy, the literature, the art and the science of Greece, which had its inception among the scholars of fifteenth century Italy, came a liberation of the Greek spirit of free criticism, a desire for natural knowledge and a diffusion of Greek modes of thought. What had most deeply influenced the mind and stamped the civilization of the Middle Ages was its supernaturalism, its mystic, wistful otherworldiness. We behold it raising the walls of Notre Dame and Cologne, of Durham and Lincoln, of St. Mark's and St. Peter's; it inspired the chisel of Michael Angelo and the brush of Raphael; like some sweet perfume it exhales from the works of Albertus Magnus, Thomas Aquinas and Bonaventura, not less than from those of à Kempis and St. Teresa. The same religious spirit was not uncommon in the medical works of the time, for Wepfer himself writes as the last sentence of his treatise on apoplexy the words, *Soli Deo Gloria*. In the hierarchy of medieval learning theology was Queen, *Regina scientiarum*, and the other sciences were her handmaids, *Ancillæ theologiæ*.

On the other hand the dominant characteristic of the Renaissance was its naturalism, its all pervasive worldliness and its Hellenic individualism. A passionate, irrepressible yearning for freedom, an intense desire to escape the restraints of outward authority, a longing for what seemed to them rightly or wrongly a fuller, larger, richer life actuated the best of these men; such men as Desiderius Erasmus, Johann Reuchlin, Thomas Linacre and Sir Thomas More. The voice of tradition, sometimes so harsh and insistent in medieval times, no longer dictated to their pen; or spake to them only in whisper; as their motto they adopted if not literally, at least in practice, the *homo mensura* principle of Protagoras; and from speculation upon a life to come they turned their glad eyes to the life and the world of Nature about them, and discovered there as Shelley did in after years, a "wilderness of harmony."

Such was the spirit abroad in the world of learning when Wepfer began his work; for the Renaissance in any just conception of it, should be looked upon as a spirit, a tendency, a movement rather than as a body of systematic doctrines and beliefs. But however far-reaching the influence of Hellenism, it would be an error to think of it as immediately supplanting the older habits of thought. Men do not and should not, easily relinquish the heritage of centuries, and in an age of transition, old and new, true and false, fact and phantasy are to be found inextricably blended together. A curious example of this in the popular medicine of the time, is Nicholas Culpeper's *Complete Herbal*, written "from my house in Spitalfields next the Red Lion, September 5th, 1653," five years before the publication of Wepfer's *de Apoplexia*. "He that would know the operation of the herbs must look up to the stars astrologically," says this master; and so to him briony is "a furious martial plant," and brank ursine "an excellent plant under the dominion of the moon." Of rosemary he says, "the sun claims privilege in it, and it is under the celestial ram," and of viper's bugloss, "it is a most gallant herb of the sun." (*Apologia Diffidentis*, W. Compton Leith, London, 1908.)

In the universities the Galenists still held their own against the innovators, and hurled their verbal thunderbolts at the instigators of novelty, who were branded as traitors in the medical camp. At the great University of Paris, taught the fiery old Galenist Riolan, who vehemently declared that he would rather be wrong with Galen than right with Paracelsus. There too was John Riolan, his son (to whom Wepfer devotes much attention), Dean of the University, Professor of Anatomy and First Physician to the Queen Mother, Marie de Medicis, who preferred the old way in place of Harvey's and whose purpose in life was "to keep the physic of Galen in good repair"; and after Riolan, the son, came his friend and admirer Gui Patin, the genial writer of letters who undertook in his lectures not only to expound Galen but also to answer all questions and to solve all difficulties. That the older philosophy was by no means dead may be further understood from the fact that in 1614, six years before the birth of Wepfer and two years before Harvey's demonstration at the College of Physicians, the famous Jesuit Suarez, the last of the great scholastics, had published at Geneva his two-volume *Disputationes Metaphysicæ*. This work was quite generally used as a text-book in the seventeenth century, during which the pioneers of modern philosophy grew to maturity. It contained all the complexities and subtleties of scholasticism, and may perhaps have contributed to the scholastic elements in Descartes and Spinoza.

At Montpellier the ancient traditions were still in vogue. In Lord King's Life of John Locke,[2] is given an account of the annual "capping" at this famous seat of learning. Locke writes in his diary: "The manner of making a Doctor of

[2] Quoted by John Brown, M. D., *Horæ Subsecivæ*, p. 15.

IOH IACOBUS WEPFERUS DIVERS. S.R.I. ELECT. ET PRINCIP. ARCHIATER. PHYSICUS SCAPHUSIANUS. ACAD. LEOPOLD. NAT. CURIOSUS ADJUNCTUS. NAT. 1620. DECUB. 1695.
Wepferum signasse satest, abscedite vates,
Non capiunt maius nomina tanta decus.
G. THOMASIUS.
Dict. Sciller Staphusian. Sculpsit

JOH. JACOBI WEPFERI
Medicinæ Doctoris
OBSERVATIONES ANATOMICÆ,
EX
Cadaveribus eorum, quos
sustulit
APOPLEXIA.
Cum Exercitatione
DE EIUS LOCO AFFECTO.

SCHAFFHUSII.

Typis JOH. CASPARI SUTERI, M DC LVIII.

Premiere edition

Physic is this: first, a procession of scarlet robes and black caps—the professor took his seat—and after a company of fiddlers had played a certain time, he made them a sign to hold, that he might have an opportunity to entertain the company, which he did with a speech against *innovations*—the musicians then took their turn. The inceptor or candidate then began his speech, wherein I found little edification, being chiefly complimentary to the chancellor and professors who were present."

These must indeed have been anxious days for the old doctors. What with Molière holding their diaphanous pedantry up to ridicule and the younger generation of physicians deserting the primrose path of speculation, lined now with the white bones of dead theories, and entering instead the great workshop of Nature, the ancient sons of Aesculapius must have felt their influence and their dignity fading into a sad and sorry thing. The new spirit spoke in no uncertain terms. "Medicine," says Lord Bacon, "is a science which hath been more professed than labored, more labored than advanced, the labor being in my judgment more in a circle than in progression: I find much iteration but small addition." And in the same tone Dr. John Locke, writing to his friend the famous Irish physician, Sir Thomas Molyneux, speaks of the medicine of his time as follows: "I perfectly agree with you concerning general theories—the curse of the time, and destructive not less of life than of science—they are for the most part but a sort of waking dream, with which, when men have warmed their heads, they pass into unquestionable truths. *This is beginning at the wrong end,* men laying the foundation in their own fancies, and then suiting the phenomena of diseases and the cure of them, to these fancies. I wonder, after the pattern Dr. Sydenham has set of a better way, men should return again to this romance way of physic. But I see it is more easy and more natural for men *to build castles in the air of their own, than to survey well those that are on the ground. Nicely to observe the history of diseases in all their changes and circumstances is a work of time, accurateness, attention and judgment,* and wherein, if men through prepossession or oscitancy, mistake, they may be convinced of their error by unerring nature and matter of fact. What we know of the works of nature, especially in the constitution of health and the operations of our own bodies, *is only by the sensible effects, but not by any certainty we can have of the tools she uses or the ways she works by.*" (Quoted by John Brown, M. D., *Horæ Subsecivæ*, p. 21.)

Observation, the patient study of nature, was to be then the watch-word of the new philosophy, the philosophy of Wepfer, Harvey, Galileo, Vesalius, Locke, Sydenham, Descartes, Borelli, Hooke, Van Helmont, Boyle, Mayow, Malpighi, Swammerdam and the Royal Society of England, founded with the hope that it would help its members in their "attempts by actual experience to shape out a new philosophy or to perfect the old." And here one may appropriately borrow the words of Walter Pater, spoken of an older school of learning: "To that school the young man would come, eager for truth, expecting much from philosophy, in no ignoble curiosity, aspiring after nothing less than an 'initiation.' He would be sent back sooner or later, to experience, to the world of concrete impressions, to things as they may be seen, heard, felt by him; but with a wonderful machinery of observation, and free from the tyranny of mere theories." (Marius, the Epicurean, p. 128.)

In concluding this brief and altogether too imperfect sketch of the general spirit of Renaissance medicine in the seventeenth century, I hope I may digress for a moment to point out the interesting analogy which it seems to me may be drawn between the medicine of this period and that of Greece in the era of Hippocrates. This analogy while, perhaps, not obvious at once becomes apparent if we look beneath the surface of things, for in each there was a period of speculation which by its very absurdities and extravagances led to an inevitable reaction and a return to a healthier mode of thought, while in each instance again this reaction was determined, either directly or indirectly, by the teaching of the physicians of Cos. In the years preceding the Hippocratic period, it had been the school of Cnidus which occupied the position of pre-eminence in the medical thought of Greece; and this school inspired by the doctrines of Heraclitus, Anaxagoras and Empedocles, had come under the influence of that nature-philosophy which led it astray, and which by enervating much of its fundamental thinking, ultimately prepared its downfall. The Cnidian school represented an attempt to build medicine upon a basis of cosmology, an attempt which then, and ever since, was foredoomed to failure. In the consummation of this effort hypothesis was added to hypothesis, analogy to analogy, speculation to speculation, until the whole stood like a pyramid resting upon its apex. Such very excesses of imagination could not but produce a reaction, the instigation of which, shall ever redound to the honor of the School of Cos. Taking their stand upon the firm ground of observation and experience, the Hippocratic physicians divorced medicine from the airy phantasies of the prevailing nature-philosophy, as well as from a misleading supernaturalism, and by their patient, acute study of phenomena, cleared the path along which all time science has travelled in the Western world.

It is not difficult to trace a similar evolution in the medicine of the seventeenth century Renaissance. The philosophical dialectic, and Oriental pseudo-mysticism of many medieval physicians, like the nature-philosophy of Cnidus, had enticed medicine, far, very far beyond its legitimate province.[3] The bubble was just about to burst, when by the fortunate progress of human events, the physicians of the Renaissance were brought into immediate possession of the writings and hence of the method of the *corpus Hippocraticum*. Once more they returned to the ways of their ancient masters. By building their hypotheses upon the data of sense, they gathered up again the broken strands of Hellenic thought, and wove them as the first

[3] I do not, of course, forget that during the Middle Ages, such men as William of Salicet, Lanfranc, Mondino, Taddeo and Gui de Chauliac, following the Greek tradition, did much to advance anatomy and practical surgery.

threads into the marvellous fabric of modern science. To them as to the Greeks was given the "teeming wealth of constructive imagination united with the sleepless critical spirit which shrank from no test of audacity; there was the most powerful impulse to generalization coupled with the sharpest faculty for descrying and distinguishing the finest shades of phenomenal peculiarity." (Gomperz, Greek Thinkers, Vol. I, p. 276.) And if, as was bound to happen, their generalizations were oftentimes erroneous, such errors could be, as indeed they have been, corrected by an appeal to the visible record upon the open scroll of Nature.

John James Wepfer, son of George Michael Wepfer, Councillor of the Canton, was born December 23, 1620, at Schaffhausen, which in after years became the birthplace of Johann von Müller, the historian of Switzerland. Schaffhausen, an ancient town, quaintly and irregularly built, is situated upon an eminence overlooking the Rhine, twenty-four miles north of Zürich. Among other historic buildings it contains a massive basilica (1052) in which is the bell that inspired Schiller's "Song of the Bell," and Longfellow's "Golden Legend." At the time of Wepfer's birth Descartes was twenty-four and had as yet published nothing; twenty years had passed since the cruel burning of Giordano Bruno at Rome; Galileo was fifty-six and ten years previous had made his most remarkable discovery, that of Jupiter's satellites, January 7, 1610. In the very year of Wepfer's birth Francis Bacon gave to the world his *Novum Organum;* while two years were yet to pass before the birth of Molière (1622) and eight before the publication of Harvey's *Exercitatio* (1628). During eight years Wepfer studied the humanities and medicine at Bâle and at Strasburg, and then, like other youths of his time, spent two years in the universities of Italy, that Italy to which Linacre, from his altar upon the mountain top of Cevennes addressed those fine words: "*Hoc tibi mater studiorum, ô sancta meorum, templum Linacrus dedicat, Italia.*" Returning from Italy, where his young mind must have been fired with a love of learning, Wepfer took his Doctor's degree at Bâle in 1647, just ten years after Descartes had published his "Philosophical Essays" containing the Discourse Upon Method. The magistrates of his native town were not slow to appreciate that in Wepfer they possessed a brilliant young man; accordingly in November of 1647, they appointed him physician to the city; and what had hitherto been most unusual, they conferred upon him the privilege of performing post-mortem examinations. With such diligence and success did Wepfer pursue the duties of his profession that ere long his name was heralded far beyond his native Schaffhausen. In 1675 he was appointed physician to the Duke of Wirtemberg and shortly afterward to the Marquis de Dourlach and to Charles, the Elector Palatine. Like his famous predecessor in the sixteenth century, Ambroise Paré and other illustrious physicians in those troublous times, Wepfer served as an army surgeon; and the care which he bestowed upon the Duke of Wirtemberg as well as upon the soldiers of the army which this Prince commanded seriously undermined his health. Although a septuagenarian he gave his service freely and constantly to the service of the army of the Emperor Leopold, which was being daily decimated by the ravages of an epidemic fever. In this work he became a victim to his own zeal and succumbed to the illness for which age, overwork and fatigue had prepared him. He died January 28, 1695, in his library, surrounded by the books which in life he had loved so well. At his own request an autopsy was performed and it was then discovered that there was calcification of the aorta, which he himself had conjectured.

Concerning the daily life and habits of Wepfer we possess some information.[4] He rarely retired before eleven and usually arose about four in the morning. Sunrise found him in his study, where he devoted the first part of the day to prayer and to the reading of the sacred scriptures, both in the Greek and the Latin tongue. The rest of the day he devoted to the Muses with such assiduity and zeal that he was never idle; even at his meals he was busy with some book or with his correspondence. An intense desire for knowledge filled him and so great indeed was this desire that when the opportunity was lacking for investigating human bodies, he devoted his leisure time to the study of the lower animals, his observations upon which he reported frequently to his medical brethren.

In his diet Wepfer was most frugal. Of food and drink he took only so much as he thought necessary to refresh his energy; and even at the tables of princes he refused those things which he considered injurious. Wine he drank only with his food, and even then he desired that it be diluted with water, so that thus by his example he might show to others how potent is temperance in the conservation of vigorous health.

Beside his treatise upon apoplexy Wepfer was the author of several other valuable works characterized by scientific insight, wide knowledge and careful observation. The excellent researches which he published in 1679 upon the effects of hemlock and other poisons,[5] contributed not a little to the support of the doctrine of vital force in the heart; for these researches showed that in animals killed with nux vomica or other poisons, the blood exhibited not the least trace of alteration, but that the fibres of the heart were shrunken and the structure of the viscera changed. Wepfer further demonstrated that the heart devoid of blood could be kept in motion for some moments after death by the action of certain substances. His contributions to pathological anatomy are valuable, while to comparative anatomy he added many exact descriptions, such as those of the structure of the wolf and the eagle, based upon the careful dissections which he had made.

But for us his most interesting work is the *de Apoplexia*, a small volume of 304 pages, published at Schaffhausen in 1658; reprinted at the same place in 1675, and at Amsterdam in 1681, 1710, and 1724. Although well known upon the Continent, these admirable observations seem to have been little read in England; for as Dr. Norman Moore tells us[6] they are

[4] From the Memorial Address contained in Wepfer's "*Observationes de Affectibus Capitis*," 1745.

[5] *Circutæ aquaticæ historia et noxæ*, Bâle, 1679.

[6] Medicine in the British Isles, Oxford, Clarendon Press, 1908, p. 123.

not mentioned in the controversies which arose about the attack of apoplexy which was the beginning of the fatal illness of King Charles *II*, nor is there the least allusion to them in the *Cerebri anatome* of Willis, published in 1664.

Wepfer's preface discloses admirably the spirit with which he approached his work. Therein he writes as follows[7]: That the lacteal veins, the circulation of the blood, the chyliferous ducts, the lymphatic vessels and the other discoveries of this age have aroused not a little disturbance in pathology, is well known to those who, brought up upon the ancient dogmas, have learned the new things as well. For concerning the use and activities of many parts the views hitherto entertained must of necessity be altered, and not a few of them changed, amended or explained in an altogether different fashion. With many persons, however, assent is obtained with difficulty, and from those particularly, who from childhood have been imbued with other and diverse opinions. Now since solid and substantial arguments and the testimony of the senses are alone able to convince I have for several years, after I had learned of the circulation of the blood, opened many human bodies, both alone and with the assistance of my illustrious and learned colleagues Christopher Harder, Frederick Screta, and Emmanuel Hurter. Accordingly in the course of some years I have collected many histories of apoplexy, lethargy, mania, ulcer of the throat, pleurisy, phthisis, palpitation of the heart, hectic fever, hydrops of the chest, very great distention of the stomach, ulcer of the same, dysentery, wounds of the intestine, ascites and anasarca, enlarged spleen, ulcerated kidney, abscess of the mesentery, calculus of the bladder, rupture of the same, hydrops of the uterus, difficult birth, rupture of an intestinal hernia, and various other diseases. I shall give here the histories of four cases of apoplexy, to which I have added a dissertation concerning the place affected in this disease. Incidentally I have set forth the proximate causes of the same, and to the best of my ability have accommodated all to the laws of the circular motion of the blood. Wepfer then goes on to say that if he has fallen into errors, and his errors are pointed out to him he will gladly correct them; and that if the histories of apoplexy which he has given meet with the approval of his readers, he will add still other histories later on, accompanying each with a brief explanation. Among these promised histories may be mentioned particularly that of a young girl without a brain and that of an enlarged spleen, observed some years before.

In his four case histories the author gives an account of as many apoplectic attacks, upon the victims of which he had the opportunity of performing autopsies. The ages of these patients were respectively, 45, 70, 60, and 50 years, and in each of them a cerebral hemorrhage was found. Having completed the histories and the account of the post-mortem findings in his cases, Wepfer proceeds to the main thesis of his book, the *Exercitatio Medica de Loco Affecto in Apoplexia*,[8] which I desire briefly to summarize.

We have said that Wepfer had the eyes of Vesalius and that the bright images upon his imagination were etched by the pale ghost of Galen. As an example of the first characteristic we may point to his constant appeal to the testimony of the senses; and to illustrate the second, we may refer to the unquestioning faith with which he accepts the ancient theory of the animal spirits around which so many controversies have been waged in the history of medicine. John Riolan, the son, of Paris, "defender of lost causes," as Wepfer calls him, is the man against whose opinions our author directs a great part of his dissertation. Riolan taught after Galen, that in man, the internal carotid arteries having entered the skull, immediately divided outside the dura into a number of small communicating branches, and formed thereby the so-called "rete mirabile," from which the vital spirits distilled into the ventricles of the brain, where they were transformed into animal spirits and whence they were carried by the nerves to the various parts of the body. Both of these opinions Wepfer denies and to substantiate his assertions he carries Riolan to the direct evidence afforded by anatomy. Neither Riolan, he says, nor anyone else has seen or will ever see in man, this rete mirabile formed from the interlacing branches of the internal carotid arteries and lying beneath the dura mater at the sides of the sphenoid bone. For in order to demonstrate the existence of parts that are visible and tangible, nothing short of the solid testimony of the eyes and the hands must be sought; and to this testimony alone should belief be given. Accordingly, if with industry and caution you look for this supposed rete you will find that each internal carotid artery proceeds intact and not divided, along the sides of the sphenoid bone and the pituitary gland; furthermore that it perforates the dura mater intact, and then, having divided into its several branches, permeates the different parts of the brain with its vivifying nourishment, not even a drop of which reaches the dura mater. This have I observed not once nor in one head, but as often as I have sought for the much talked of rete mirabile, a thing I have done many times.

In two ways I have investigated the course of this artery. First, having incised the dura mater and divided the artery I introduced a stylus into it at the point where it perforates the dura mater, and with what care I could, I followed the artery from the pituitary gland to its canal in the bone. In other cases I followed the carotid artery to the styloid process and observed that here it bends and having entered the canal in the petrous bone proceeds obliquely forward; accordingly with whatever dexterity I was capable, removing the flesh and membranes, I excised the bony canal for about an inch of its length, diligently watching lest I should injure the artery. Having emerged from the canal the artery ascends, turning a little posteriorly, then bending again descends by the pituitary

[7] In the quotations from Wepfer, I have, for the sake of brevity, paraphrased rather than translated literally the words of the text.

[8] By "apoplexy" Wepfer means not merely hemiplegia, but any attack characterized by generalized loss of sensation and movement.

gland; once again it ascends and having been covered by and held in the deep and conspicuous sinus beneath the anterior apophysis of the ephippium, turns upward and perforates the dura mater near the infundibulum. Throughout this whole course it remains intact; nor have I observed any branch given off by it to the neighboring parts. How far this course of the internal carotid artery differs from the rete mirabile of Galen, the impartial reader may judge by comparing the descriptions of both.

When he has demonstrated anatomically the course of the internal carotid artery, Wepfer concludes that since it is plainly obvious that in man the rete mirabile is non-existent and merely a fiction, no arteries derived from it pass to the dura mater. It is true enough that many arteries are distributed to the dura mater, both anteriorly and posteriorly, but these are derived from the external carotid, which also supplies the face, the eyes, the fauces and the back part of the head. Thus Wepfer flatly disproves what Riolan had written, that from the rete mirabile were given off innumerable branches coursing in the dura mater, and serving as channels to convey the blood upward to the meningeal sinuses.

Furthermore, continues Wepfer, Riolan ought to have indicated precisely the manner in which the arteries of the dura mater arrive at the sinuses, since Fallopius declares that no arteries of the dura mater pass to the latter, and furthermore that this is so obvious that not even a word ought to be said regarding it. But that this is not so obvious to the senses I shall point out in the proper place. In the meantime I shall show in what manner the blood in the arteries of the dura mater reaches the third or longitudinal sinus. Each of these arteries laterally and anteriorly passes toward the corpus falciform, and having arrived at a point about a finger's breadth from it, it perforates the dura mater in several places and is united with the vessels which proceed from the sinuses of the dura mater and which are true veins; there it pours its blood into the latter and thus blood reaches the sinus. Therefore I, together with all those who favor the circulation of the blood even in the brain, declare to Riolan that the arteries of the dura mater everywhere pour their own blood into its venous sinuses. Accordingly what will we have left over for the ventricles? And how will he prove that they are the true storehouse of the animal spirits? For all of the blood carried to this sinus naturally proceeds to the heart through the jugular veins, and not a drop of blood distills from them to the brain or to the ventricles; and moreover if this should occur it would result in the gravest injury to the individual.

In contrast with this thoroughly scientific description of the cerebral vessels let us place Riolan's account of the same set of facts. From the rete mirabile, he writes, numerous arterial branches spread through the dura mater, and thus deposit the blood in the third or longitudinal sinus; from this sinus innumerable small tributaries are given off which spread out over the external cerebral convolutions and distill arterial blood, like dew, from above downwards. Furthermore, he adds that through the torcular, the great vein of Galen, known also as the fourth sinus, carries blood and spirits to the ventricles of the brain. But in this description, according to Wepfer, there are as many errors as there are words.

For what could be more absurd than that the blood leaving the vessels should penetrate the brain throughout its substance? For would not the blood by its very weight and in obedience to a constant law permeate to the base of the brain? Again, the blood distilling from above downwards and lying outside the vessels in the substance of the brain, would in no way be able to re-enter these vessels, and the constant impulse of new blood in the arteries of the external convolutions would bring about a large accumulation, whence most certainly suffocation and death would result. Or on the other hand the blood outside the vessels, resting quietly in the cerebral substance, would putrefy and set up an inflammation, which would cause a perpetual delirium. But these things are so absurd that no one save a delirious person would believe them.

Because of these and other objections to the theory of Riolan, Wepfer was constrained to postulate circulation of the blood in the brain as well as in other parts of the body. And in pursuance of his purpose to find the exact channels of this circulation he was led to make many dissections of the cerebral vessels, for as he himself says, despite the careful labors of distinguished men, like Veslingius, Thomas Bartholin, Highmore, Spigelius and many others, an incomplete knowledge of the distribution of the cerebral vessels had hitherto rendered the circulation of blood in the brain somewhat obscure.

With painstaking detail Wepfer describes his method of opening the cranium, and of removing the brain with its vessels. He then gives a truly admirable and clear description of the vessels of the dura mater, of the vertebral arteries and of the internal carotid arteries with their branches and their terminal ramifications coursing in the pia mater and entering the substance of the brain. It is interesting to note that in this connection he describes accurately the arterial circular anastomosis which afterwards came to bear the name of Willis. Leaving the arteries he discusses the venous sinuses and gives it as his opinion that the arteries of the dura mater as well as the internal carotids and vertebrals transmit their blood ultimately to the longitudinal sinus whence it passes by way of the jugular veins back to the heart. Wepfer summarizes his conclusions in the following words:

If the method of dissecting and of inquiry which I have indicated be observed, it will clearly appear that the carotid and vertebral arteries send a large number of branches within the convolutions, where they meet and are joined with the descending tributaries of the third sinus, and this for no other purpose save that these descending tributaries may take up the blood in excess of that required for the nutrition of the brain and the generation of the animal spirits and pass it on to the lateral sinuses and the annexed jugular veins through which it returns promptly to the heart; whence, having received new energy, it returns again by the force of that necessity in virtue of which the blood needs perpetual motion for its own conservation. Finally that the blood from the third longitudinal sinus passes back to the heart, and that contrary

to Riolan's belief, none of it passes through the vein of Galen into the choroid plexus and the ventricles, Wepfer demonstrates by experiment, for he says, that having injected fluid by means of a siphon into the longitudinal sinus he observed that it flowed not to the fourth sinus or vein of Galen, but rather to the lateral sinuses.

During centuries it had been accepted medical teaching that the animal spirits were generated in the ventricles of the brain and to conserve this ventricular function the most curious anatomical explanations were invented, such for example as that of Riolan. When, however, dissection commenced to disclose the true course of the cerebral vessels, not a few physicians began to doubt the traditional teaching and in the very vanguard of this number was Wepfer who, basing his physiological theories upon his anatomical findings, as we have briefly described them, placed the locus of the generation of animal spirits in the substance of the brain. In this belief he followed Hoffman, and like the latter, taught that the ventricles were merely the receptacles of the excrement of the brain, confirmed in this belief as he was, by the famous case of hydrocephalous reported by Vesalius, in which case the ventricles were much distended with fluid and yet the vital functions were preserved. This, argued Wepfer, could not possibly be the case were the ventricles the manufactory of the animal spirits, for then the very life of the individual would have been destroyed. And not only this, but also a further fact argues against the generation of animal spirits in the ventricles, namely, that the pia mater covers not merely the outer surface of the brain but likewise the cavities of the ventricles themselves, and this being so, the spirits could not leave the ventricles, since the pia mater contains no foramina permitting of their ingress or egress. Again the two lateral ventricles communicate with the third and this with the infundibulum which itself opens into the sphenoid bone, and consequently into the palate, so who can deny in these circumstances that the animal spirits would by this route escape from the ventricles? And indeed does not Nature herself by this very arrangement show her intention that the ventricles are meant to be the receptacles of the excrementitious products of the brain? On the other hand the arrangement of the vessels in the substance of the brain and the origin of all the nerves therefrom demonstrates beyond peradventure that in this cerebral substance the animal spirits are generated, whence they flow along the nerves throughout the whole body.

A most curious reason, among several others, is given by Wepfer to support his contention that the ventricles are filled with the excrement of the brain. Since the brain, he writes, especially in man, is of large size, and accordingly stands in need of much nourishment, there will be a copious amount of excrement which can be contained only in ventricles like those of the brain, for otherwise it would be necessary for men to expectorate constantly. Now as a fact much excrement is often expectorated in the morning after sleep, which excrement throughout the night must be retained in some capacious place, such as a cavity of considerable size; and since, aside from the ventricles, no such cavities exist in the brain, it is necessary to conclude that the excrement is concealed in them. And moreover, since one finds not rarely but frequently that the ventricles contain serous excrement, who can hope to find that in the same place where watery excrement is contained the most subtle spirits are likewise generated—those spirits which are later to permeate the nerves. Who will dare to say that these spirits will not be constantly contaminated by the fluid and made so harsh as to be rendered altogether inept for the work to which they are destined? Riolan, continues Wepfer triumphantly, dares not reply to this question; and as he passes over the arguments proving that the ventricles are the receptacles of excrement, so also this question he either judges unworthy of response, or perceiving the absurdity of the thing, prefers to hold his tongue rather than to speak badly.

Such then are some of the points of controversy between Riolan, the defender of Galen and Wepfer, the progressive Swiss who writes with disgust: "To this pass has medicine been reduced, that if anyone taught by reason and by faith in his senses, believes otherwise than the majority who glory in the authority of Galen, he straightway hears himself called an innovator and a smatterer by those tyrants of the intellect."

Leaving this part of his dissertation, let us now turn to Wepfer's views upon the causes and seat of apoplexy. It is not possible, he says, for anyone who is acquainted with the perpetual flow of the blood from the heart through the arteries and its return through the veins to the heart, to hold the same opinions concerning apoplexy as those who believe that the blood is replaced gradually by more recently generated blood or that for other reasons it is carried very slowly to the parts. In seeking for the proximate causes, the modes of its production, and the place affected in apoplexy, I shall follow in the footsteps partly of older and partly of more recent writers; and I set forth that apoplexy is produced in the first place, either because the afflux of the blood through the arteries is denied to the brain, or because the efflux of animal spirits from the cerebrum and cerebellum through the nerves and spinal cord is prohibited, or in certain cases, because of both causes acting together. These causes ought to be of primary importance since when they are present, all the animal actions suddenly cease, whether the apoplexy gives warning of its approach by prodromal symptoms or whether it occurs without warning, so that not even the most sagacious could foresee it.

Since the influx of blood to every living part is absolutely necessary for the production of heat and energy, the privation of this blood must result in the loss of the power of action. And not only is there loss of motion, but the mind also is disturbed, which occurs for the reason that some part of the brain is deprived of its blood. Anything therefore, which prevents the influx of blood to the brain through the carotids or the vertebral arteries, and its return through the jugular veins, is capable of producing apoplexy; and this influx of blood to the brain may be hindered by obstruction of the internal carotid and vertebral arteries, by compression of these arteries or finally by blood extravasated within the brain.

Among the causes producing obstruction Wepfer mentions in particular certain small fibrous bodies that he has found in the carotid and vertebral arteries, as well as in the heart, and he remarks that if these *corpora fibrosa* should occupy the lumen of the arteries at or near to their point of entrance into the brain these arteries would be obstructed in such fashion that either they would be occluded altogether or made so narrow that sufficient blood for nourishing its substance and for generating the animal spirits would be unable to enter the brain and hence an apoplexy would result. To this variety of apoplexy those are most liable who lead an idle life, those who are obese and those whose face and hands are livid and whose pulse is constantly unequal.

A second cause of obstruction may be found in the composition of the blood. We have previously pointed out, writes Wepfer, that the vertebral and carotid arteries send innumerable minute branches into the substance of the cerebrum and the cerebellum, and one may quite properly inquire whether or not it is possible for these small arteries to be obstructed so that the vital spirits would not be supplied in the proportion requisite for the generation of the animal spirits, and hence whether an apoplexy would result. To this question the reply must be made that there is no doubt that the blood may be, under certain circumstances, so mixed with viscid phlegm that its constant propulsion through the small arteries would produce obstruction and consequently an inevitable apoplexy. This obstruction does not, however, abrogate at one stroke all the animal actions, but now many, now few are affected depending upon the amount and degree of arterial obstruction. Hence certain patients are deprived of speech alone; if the vessels of one side are implicated, hemiplegia follows; if both sides are affected, a true apoplexy will be produced. And these are the apoplexies from which recovery follows often in a comparatively short time.

Regarding apoplexy caused by intracerebral hemorrhage Wepfer is very clear, for he observes that blood extravasated within the cranium will produce an apoplexy if it is copious in amount and lies in the deeper parts, particularly about the base, as three recent cases would seem to prove. For the blood within the arteries moves quickly and constantly during life unless there is some obstruction, and when a vessel is opened there is a great flow of blood in a very short time, as enormous hemorrhages often testify.

These hemorrhages many times deposit their blood not only in the substance of the brain but also in the cavities of the ventricles, and hence it is easy to understand how so great an outpouring of blood should cause apoplexy, for the brain cannot be deprived for even a short period, of its nourishment and the material out of which the animal spirits are formed without producing an abolition of all the animal actions. Effusion of blood within the cranium is caused either by the opening of the anastomoses of the vessels, or quite frequently by their rupture and laceration, or more rarely on account of their erosion.

That any hindrance to the efflux of animal spirits to the organs of sense and of motion could precipitate an apoplexy was accredited medical teaching from the time of Galen; for in such case it was believed all the parts would be deprived of sensory and motor power. In Wepfer's view of it, this is orthodox opinion, and he writes that an apoplexy will result whenever sudden obstruction or compression of the nerves prevents the flow of animal spirits through them. As regards obstruction, it may be said that since the cerebrum and cerebellum are filled with pores, not only on account of the many arteries coursing through them, but also because of the animal spirits which are propelled from their substance into the nerves, it is quite essential that the pores in the medullary substance remain patent to the arteries running therein, for unless this is so, the animal spirits will be found deficient, because the latter require a constant supply of vital spirits and when these are denied the animal actions straightway cease. If any humor in our body is capable of obstructing these pores in the medullary substance, assuredly serum must be mentioned first. For although serum appears to be normal to the brain, since it is found constantly in the ventricles, none the less, when it is present in too great amount it may obstruct many if not all of the pores, and thus produce great mischief. Flowing with the blood in the capillary arteries throughout the brain, the serum is thin and almost wanting in viscidity, so that it is able to pass through the more minute foramina and the narrowest passages, in the same way that water flows through the little cavities in a sponge. Now if this serum should boil and bubble up within the vessels and extrude itself into the substance of the cerebrum and cerebellum it would destroy the animal spirits and obstruct their exit, hence all the animal actions, not excluding the internal senses, would cease. The quantity of serum may be more or less, and the number of pores obstructed many or few; accordingly a more severe or slighter apoplexy will be produced.

If, however, the serum is to produce an apoplexy, a certain previous disposition of the cerebrum and cerebellum must be assumed. And if one may dare to explain the nature of this predisposition one may say that it consists in a too great laxity of the pores in the medullary substance because of which not only the more spirituous part of the blood but also the thinner portion of the serum transudes into them and destroys the animal spirits so necessary to activity. Among the factors favoring this predisposition Wepfer mentions narcotics, especially opium, absinthe, cannabis and wine. In speaking of wine he observes that daily indiscretions in drinking predisposes to apoplexy which occurs when the slightest occasion is given for the effervescence of the serum. Other causes of predisposition Wepfer finds in idleness, in sleep when too long protracted, and in old age. Therefore, he continues, it is not hard to understand that not all who abound in serum or in whose vessels it may boil up, are destroyed by apoplexy, but only those whose medullary substance, on account of errors of living or hereditary infirmity, has been invaded by serum which has been separated by a sort of fermentation from the mass of the blood, and which produces obstruction in this medullary substance.

It would be interesting, did time permit, to follow Wepfer in his description of the other humors, such as the bile, which when mixed with the blood, are capable of obstructing the free flow of the animal spirits; but enough has been said, perhaps, to justify our selection of Wepfer as a type of the most progressive physicians of the seventeenth century Renaissance. To enjoy the full flavor of his thought it is essential to read his writings, for so filled are they with fact and compact reasoning that to abstract them is of necessity to mutilate their logical coherence. In the small work which we have been describing, Wepfer presents probably the first systematic account of apoplexy, in which this was explained according to the new theory of the circulation of the blood. And throughout his work he remains true to the spirit of Harvey, the spirit expressed in his dedication where he writes: "Since this age, more than others, is especially happy, because of certain discoveries showing the admirable structure and most elegant economy of our bodies, the work of an omniscient Maker, I have been unwilling either thoughtlessly to believe the new or pertinaciously to defend the old, believing the saying trite of those who proclaim that they prefer to err with the ancients, rather than profess the truth with the moderns; for this is the part neither of a wise nor of a prudent nor of a loyal physician."

DISSECTING ANEURYSM.

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The literature contains descriptions of a great number of cases of dissecting aneurysms of all sorts affecting chiefly the aorta and either leading to rupture with the death of the individual or to healing by the organization of the hemorrhage or by the establishment of a new channel between the walls of the aorta through which the blood also circulates. This literature has been collected and analyzed by Bostroem[1], by Flockemann[2] and most recently by Franz Schede.[3] The following description of several cases, therefore, is given merely to add to the material and to record one or two peculiar results which may follow the extravasation of blood in this way:

CASE 1.—T. C. W., white, male, age 58, medical No. 2662, had been treated several times in the Johns Hopkins Hospital for dyspnœa and epigastric pain. During his last admission the heart sounds were rather feeble and there was a diastolic murmur at the left border of the sternum, not obliterating the second sound. On the morning of February 20, he was walking about the ward feeling fairly well, but at noon complained of pain in the stomach and weakness and was put to bed and died suddenly in the afternoon. The autopsy (No. 389) was reported as follows:

Anatomical Diagnosis: *Arteriosclerosis; cardiac hypertrophy; dissecting aneurysm of aorta with rupture into pericardial sac; hemorrhage of pericardium; chronic diffuse nephritis; chronic passive congestion of viscera.*

The body is that of a very fat, heavily built man 176 cm. long. The pericardial cavity contains about 1000 cc. of bloody fluid and dark clots. Both layers of the pericardium are smooth. The heart is moderately enlarged, weight 620 gr., the left ventricle hypertrophied, the thickness of its wall being 20 mm., the length 10 cm. The right ventricle is 8 mm. in thickness and 8 cm. in length. The tricuspid and pulmonic valves are quite delicate. The mitral valve somewhat thickened and opaque with a few yellowish sclerotic patches. The aortic valves are thickened especially at the corpora arantii, and are somewhat degenerated in patches but not calcified. The aorta is the seat of an extensive atheroma with calcified patches and atheromatous ulcers as well as areas of intimal thickening and fatty degeneration. Beginning at the root of the aorta there is a tear measuring 3 cm. in length, extending through the whole wall of the aorta and on its outer surface where it lies against the right auricle measuring 4½ cm. in length and extending upward to within a short distance of the innominate artery. The adventitia of the artery is dissected up beyond the tear as far as the origin of the left subclavian and almost encircling the artery. There is another tear in the inner wall 1½ cm. above the innominate which is somewhat irregular and arched in appearance with the concavity of the arch looking toward the heart. This is a transverse tear, measuring 8 cm. across, and thus taking in all but one centimetre of the circumference of the aorta. The adventitia is deeply blood-stained over the tear and is thin and membranous; its inner surface is especially deeply stained and small clots and bits of fibrin adhere to it, as they do also to the outer surface of the torn media. It was evidently through the first and larger tear which extended also through the adventitia of the aorta, that the extravasation into the pericardium took place.

The other organs present nothing of especial interest.

In this case we have to deal with a perfectly fresh rupture of the inner walls of the aorta and in one place also of the outermost layers causing splitting of these walls and fatal hemorrhage. Doubtless the fatal effect was due not so much to the loss of blood as to the compression of the heart produced by the extravasation of blood into the relatively unyielding pericardial sac. The arterial disease was in this case very marked, but there was no obvious strain or other cause for traumatic rupture, although it was possible that the rupture may have occurred while the patient was straining at the stool. This, however, does not appear in the history. It is further to be observed in this case that there is a rather moderate hypertrophy of the left ventricle.

CASE 2, illustrated in Fig. 1, was from a patient upon whom an autopsy was performed in the neighboring almshouse. No history had been obtained, and but little was known of the man's general condition; he was about 58 years old. At autopsy there was found a high degree of arteriosclerosis affecting not only the aorta but also the larger arterial trunks. The heart is not particularly enlarged. In the aortic arch just below the orifices of the left carotid and subclavian arteries there begins a tear which

[1] Bostroem. Deutsches Archiv f. klin. Med., 1887, Vol. 42, pp. 1-74.

[2] Flockemann. Munch. Med. Woch., 1898.

[3] Franz Schede. Virchow's Arch., 192, 1908.

extends in a somewhat arched direction downward along the descending portion of the arch for a distance of 43 cm. The edges of this are sharply cut as if with a knife. It extends only part of the way through the walls of the aorta, the outer layer largely composed of adventitia being unbroken. The aorta is throughout quite markedly sclerotic, but there is practically no calcification or ulceration of the intimal lining, the sclerosis consisting of the formation of thick, somewhat opaque plaques. The splitting of the aortic wall extends from the tear described anteriorly and downward, so that the wall of the aorta is divided into two layers except about the origin of the intercostal vessels. This splitting extends downward as shown in the figure to the bifurcation of the aorta and even far along one of the common iliac arteries. The other common iliac is not affected, nor is the splitting by any means so complete with regard to the iliac as it is in the aorta. Just above the bifurcation there is a large hematoma which bulges the wall of the aorta inward, and must have very considerably narrowed its lumen. The hematoma itself projects forward about 3 cm. from the anterior surface of the aorta in the form of a sac which is filled with a laminated clot. The splitting is not by any means confined to the aortic wall but extends as shown in the figure quite far along the mesenteric and renal vessels.

Evidently, this dissecting aneurysm was not immediately followed by the death of the individual but on the contrary there was time for the formation of a thrombus of firm laminated appearance in the sac which had been produced by the extravasation in front of the bifurcation of the aorta. Close examination shows that the cleavage takes place usually in the substance of the media, leaving a little of the media attached to the adventitia and not falling precisely between the media and the adventitia. It may be observed in any aorta in which there is a high grade of arteriosclerosis, that it is fairly easy to split the wall of the aorta. This is far easier in the sclerotic aorta than in the normal where it is a matter of some difficulty to tear apart the layers. In the sclerotic aorta it may be seen with the naked eye that such cleavage takes place somewhere in the middle of the musculature. This seems to support the view held by most authors in opposition to Bostroem and Flockemann that the sclerotic disease of the aorta is the chief factor in predisposing the artery to such tears and splittings as just described.

Case 3.—This case is represented only by an old specimen in the Pathological Museum in the Johns Hopkins Hospital, but it may be briefly described on account of some slight peculiarities. The specimen consists of the aorta from an adult person which is somewhat less sclerotic than that just described and pictured. A considerable part of the wall is quite smooth and apparently elastic, but over the anterior portion there are numerous, thick, elevated plaques of sclerosis. These, however, are not particularly degenerated, and there is no calcification nor ulceration. In the arch of the aorta beginning at the origin of the left subclavian artery there is a gaping tear which extends about 3 cm. downward along the greater curvature of the arch. It extends only part of the way through and exposes the adventitia which forms the outer wall together with a portion of the media. The thin layer of media thus torn off is very distinctly visible on section. The splitting of the wall continues down at least to the abdominal portion of the aorta.

This specimen does not include the coeliac axis but the aorta has been opened along the portion which was not infiltrated by the blood which extravasated between the walls, and the specimen thus presents along its whole length a great convex ridge which occupies half of the circumference of the aorta, and which consists of the outer walls of the aorta distended with a firm clot of blood. There seems to have been no rupture either into the interior of the aorta at another point or externally, and there is therefore no reason why such a dissecting aneurysm, which really is nothing more than a hematoma in the walls of the aorta, should not have healed completely by the organization of the clot. There is, however, in its present state little or no sign of organization.

Case 4.—L. R., negro, age 30, medical No. 15,454, has been treated in the Johns Hopkins Hospital one year previous to his final admission, at which time diagnosis of aneurysm of the aorta had been made. At the final admission the patient was found to be suffering from an arthritis with symptoms of general septicemia, fever, sweating, etc. The heart at that time seemed somewhat enlarged. The point of maximum impulse was in the sixth space 12.5 cm. from the mid-sternal line. The relative cardiac dullness extended 3 cm. to the right and 13.5 cm. to the left. There was much præcordial heaving, and a local pulsation in the second, third, fourth, fifth and sixth interspaces extending far out in the first and second left interspace. There was systolic retraction in the fifth interspace. The heart sounds were clear but dull with a soft diastolic murmur in the third left interspace with a loud ringing second sound. The diastolic murmur extended along the left sternal margin but was not transmitted to the neck. The man died in delirium with very high fever.

Anatomical Diagnosis at Autopsy (No. 2087): *Aneurysm of the ascending arch of the aorta; dissecting aneurysm of descending aorta with establishment of permanent secondary channel; obliterative pericarditis; acute purulent arthritis; acute hemorrhagic nephritis; general streptococcus septicæmia.*

The body is that of a slenderly built negro 166 cm. long. Only the heart and aorta need be described. The pericardial cavity is completely obliterated by adhesions which bind the two layers together everywhere over the heart. Over the upper portion of the heart the adhesions are entirely fibrous, while over the more apical part there is a great deal of yellow glutinous material infiltrating the adhesions. On opening the heart (Fig. 2), it is found that the walls of the right auricle are somewhat thickened. The tricuspid valve is delicate and competent. The walls of the right ventricle measure 7 mm. in thickness and are quite firm. Pulmonary valves are delicate and competent. The mitral ring measures 8 cm. in circumference, the valves being slightly thickened along their edges. The wall of the left ventricle, somewhat thickened, measures 2 cm. The aortic orifice measures 8 cm. in circumference. The valves are delicate. The anterior coronary segment is normal in size, while the posterior segment is greatly enlarged and widened. Behind the posterior segment lying over the right ventricle and bulging into it behind the tricuspid valve and below the pulmonary valve is a large sac which measures 7 cm. in diameter, and the lining of which is very rough and covered with plaques of sclerosis. This extends in a sort of retort form up to the summit of the arch of the aorta and then continues over into what appears to be the lumen of the aorta. It is found, however, that in the bottom of this as it is cut open there lies a tube which is composed really of the inner walls of the aorta and the lumen of which is the real lumen of the aorta. This begins at the summit of the arch of the aorta, that is at the neck of the aneurysm, by a large orifice, the ragged edges of which project into the lumen of the artificial canal. Across the space between the actual aorta and the canal formed by the dividing wall, there run cord-like trabeculæ and adhesions

FIG. 1.

FIG. 2.

FIG. 3.

in considerable numbers. This outer canal lies in front and to the left of the aorta and does not completely encircle it; in other words the cleavage of the aortic wall which has taken place in front and to the left of the aorta affects only about half of its circumference. This channel is lined by endothelium and is fairly smooth. It has evidently allowed the circulation of blood to go on just as it had done through the aorta. The splitting extends as is shown by opening the aorta down into the left common iliac vessel for a distance of 3 or 4 cm. from the bifurcation where the septum between the inner and outer tubes ends in a thin concave edge; both channels coalescing into the normal common iliac artery.

The condition here is exactly similar to that seen in the descending portion of the arch of the aorta where the cleavage began. The intercostal vessels are in many instances torn through at their origin and although there is a hole left in the inner wall, the artery really opens from the outer tube; similarly the right renal has been torn through and that artery also opens from the outer tube. The left renal artery and the coeliac axis are normal, since they open from the anterior portion of the aorta through which no holes are torn. A probe passed through the right common iliac enters the true aorta directly since no splitting has taken place down in that direction.

In this case the process is one of long standing. The death of the man was in no way connected with formation of the dissecting aneurysm which was completely healed and perfectly compatible with life. The aorta showed, it is true, marked degenerative and sclerotic changes within the region of the actual saccular aneurysm but elsewhere as shown just above the aortic valve and throughout the lumen of the aorta the intima is fairly smooth. The man was quite young but even the existence of a relatively normal intima throughout the greater part of the aorta does not prove that the dissecting process did not arise on the basis of the pathological alteration, for we have adjacent to this the formation of a true aneurysm. The regeneration of endothelium as a lining of the whole of the newly-formed tube is a remarkable adaptation to the new condition produced. So too the functioning of the intercostal and renal arteries after their inner wall had been torn through, so that they end abruptly in the newly-formed outer tube of the aorta shows the remarkable power of adaptation to unfavorable conditions.

The question as to the mechanism of the second rupture back into the aorta has been discussed by several authors without throwing much light on the subject. It seems to me probable that chance has a great deal to do with this. The blood in the outer tube bursting outward or inward wherever it finds a weak place in the confining wall. Apparently the new growth of endothelium has not proceeded entirely from the ends of the uniform tube, but it may well have been added to by an extension through the holes produced in the inner tube by the tearing away of the arteries. A case almost precisely similar to this is described and pictured by Schede.

CASE 5.—T. K. C., male, age 60 years. The patient has shown mental disturbances for several years, in epileptiform attacks and aphasia. These were associated with accentuation of his original peculiarities, but with no delusions. On Monday, May 21, he complained of a violent pain which he could not locate. This continued for a short time but gradually improved. The patient was extremely violent and intractable. On Monday, May 28, he became much distended, complained of a pain in the appendix region, and developed jaundice. The temperature rose to 100° F., the leucocytes to 20,000, and an exploratory laparotomy was performed but revealed only extreme distension of the colon. There was no peritonitis. A colostomy was done with relief of the distension, but the man died on Tuesday, May 29. The autopsy (No. 2727) resulted in the following:

Anatomical Diagnosis: *Arteriosclerosis; chronic diffuse nephritis; cardiac hypertrophy; dissecting aneurysm of the aorta; hemorrhage into the peri-aortic tissues and the pleura; compression of the lungs; paralysis of the intestines with great distension; acute splenic tumor; encephalomalacia.*

The body is that of a stout man 170 cm. in length, deeply jaundiced and extremely fat. The peritoneal cavity contains very little turbid fluid about the colostomy wound, but there is no general peritonitis. The intestines are enormously distended, the small intestine being much more distended than it was at the operation. The large intestine has been relaxed by the operation, but there are numerous tears in its wall, extending from the cæcum to the splenic flexure which seem to have been due to stretching as they somewhat resemble lineæ albicantes. They extend down through the muscle spreading apart the muscle bundles over considerable patches of the intestine. The muscle is flecked with hemorrhages. There is nothing anywhere which could have produced an obstruction, and no sign of obstruction can be made out anywhere, on careful examination from duodenum to anus, nor is it possible to produce a volvulus by twisting the intestine for the mesentery is too short. The mucosa is normal throughout. It seems therefore that the wall of the intestine must have been paralyzed in some way to allow such distension.

The thoracic cavity. The left pleura contains no excess of fluid, and its surfaces are smooth. The right pleura, on the contrary, contains a large quantity of blood which is partly fluid, partly in large clots. The posterior portion of the right lung is entirely collapsed as a result of this compression, and the blood has permeated the tissues at the hilum of both lungs, and has run along the interlobular tissues, marking out the lobules with dark red lines. *Heart* is somewhat enlarged. The surface is everywhere smooth and covered with fat. The left ventricle is particularly firm. The right auricle contains only post-mortem clots. The endocardium of the right ventricle of the tricuspid valve, and of the pulmonary valve, which is abnormal in being composed of only two large leaflets, is quite delicate. Similarly the valves on the left side of the heart are delicate and competent, and the endocardium is everywhere smooth. The left ventricle measures 8½ cm. in length; its wall is distinctly thickened (25 mm.) and firmer than normal. The coronary arteries are tortuous and contain plaques of sclerosis. On removing the heart, lungs and abdominal organs, a large sausage-shaped mass is felt projecting into the left pleural cavity. This is dark red in color and extends down to the diaphragm. The tissues in the posterior mediastinum are everywhere, on both sides, infiltrated and distended with blood, which reaches down into the lumbar region. On more careful examination, it is found that this mass is produced by an extensive hemorrhage surrounding the aorta, œsophagus and even the trachea (Fig. 3). The hemorrhage extends upward to a point below the roots of the arteries springing from the arch which are not surrounded by blood and downward to the level of the renal arteries, is about 5 cm. in thickness, and forms a tense elastic mass bulging the pleura and peritoneum forward where it is covered by them. On cutting into this mass, it is found to be made up of a clot of blood somewhat variegated in appearance and traversed by shreds of tissue. The aorta itself shows an extremely sclerotic intima; the whole inner surface being covered with patches of varying appearance, some of which are prominent and smooth superficially, while others

are slightly roughened, some are translucent, while others are opaque and yellow. The intervening portions of the aorta are mottled with smaller and less elevated patches of yellow opacity. In the descending arch 3 cm. from the orifice of the subclavian artery there is a hole 1 cm. in diameter with somewhat irregular margins which are sunken below the surrounding surface. This lies in the middle of an especially diseased area where the artery wall is very soft and blackish with mottlings of yellow. Just outside this there is a small sac-like cavity containing a soft blood-clot; the outer wall of which seems to be composed of the adjacent tissues, but it appears to have existed for some time because the wall is partly composed of granulation tissue. Just below this at about the level of the first intercostal it is found that the walls of the aorta are split apart, the split taking place in the substance of the media and running almost all of the way around except for a band along the posterior surface through which the intercostal arteries pass out. This split contains clotted blood and is in direct communication with the adventitial sac. In the upper part the smaller vessels are apparently not followed by the split, nor is this to be made out in the vessels of the coeliac axis, etc. The walls of the aorta are, however, separated down to its bifurcation.

In this case we have apparently a rather gradually produced extravasation which gave rise to the intense pain which the man could not locate, and the more serious symptoms are doubtless to be referred largely to the extravasation of blood, not in the wall of the aorta, but outside of it altogether. It seemed possible at the time of the autopsy that the pressure of all this extravasated blood upon the splanchnic nerves might in some way account for the paralysis and distension of the intestines. Stimulation of the splanchnic would tend to cause a dilatation of the blood-vessels in the intestine with but little further effect, while paralysis of the splanchnic might allow a vaso constriction which would probably be followed by peristaltic spasm. There seems to be no evidence that this would afterward result in the distension of the intestine.

In all of these cases there was a marked arteriosclerotic change of the aorta in which condition, as we have pointed out, the cleavage of the arterial wall occurs more readily than in health. In most of the cases there has been some hypertrophy of the heart, such as so frequently accompanies arteriosclerosis. It still seems probable, however, that a sudden strain elevating the blood pressure must in conjunction with these two conditions be the final cause of the breaking through of the wall and the production of a saccular aneurysm. After that, the effects of extravasation are purely mechanical. That such extravasation is not necessarily fatal is shown by at least two of our cases in which considerable advance had been made toward healing.

PERSISTENT BACTERIURIA.

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Bacteriuria is a condition which was first described in 1881 by Roberts (1). He reported a case in which his attention was attracted by the appearance of the freshly voided urine. This presented a peculiar opalescence and exhaled a disagreeable odor. On microscopic examination the peculiar appearance was found to be due entirely to the presence of enormous numbers of bacteria, both cocci and bacilli. A few years later a case was reported by Schottelius and Reinhold (2), and in 1888 a work of Ultzman (3) was published in which a chapter was devoted to bacteriuria.

Increasing numbers of observations have been reported and the condition studied by many workers, particularly Rovsing (4), Krogius (5) and Janet (6). To-day bacteriuria is a well-recognized affection and one not infrequently encountered, and is without doubt often mistaken for mild cystitis. The bacteriuria occurring during or following typhoid fever and due to the *B. typhosus* is a form of the disease long recognized and one with which the profession is most familiar.

Bacteriuria is really a remarkable condition, and one at first sight difficult to understand, for it apparently upsets our ideas of bacterial invasion which are generally associated with inflammatory phenomena. It is difficult to reconcile the presence of enormous numbers of bacteria in the bladder urine persisting for months and even years without causing an inflammatory reaction on the part of the vesical mucosa.

There is some difference of opinion regarding the application of the term bacteriuria. Predohl (7) would limit its application to those cases in which a healthy individual without any clinical evidence of inflammation in the urinary tract and without recognizable cause voids urine which in its fresh state contains bacteria. He would not include those cases in which a previous inflammation or diseased focus existed. According to Krogius the condition is characterized by the presence of enormous numbers of bacteria in the freshly voided urine and the absence of any pronounced symptoms of inflammation of the urinary tract. He does not believe the term should be applied to cases in which it is a phenomenon secondary to an infectious nephritis or part of a general infection. Rovsing distinguishes two types of cases, one in which the urine is absolutely free from pus, another in which a few pus cells are present, but the peculiar cloudiness of the urine is due to bacteria. In his opinion bacteriuria is most frequently of renal origin.

It in reality represents an infection different only in degree from ordinary cystitis. In one the infection is present without any inflammatory reaction on the part of the bladder wall, while in the other we have the infective agent in the urine plus involvement of the vesical mucosa. As a rule the disease is one which yields readily to treatment, but occasionally it may be most intractable and resist all efforts to dislodge the in-

vading organisms. The series of cases reported below are of the intractable type and incurable as far as all our efforts have been concerned. In two cases the bacteriuria was of renal origin, and in two cases secondary to an infection of the prostatic urethra, prostate and seminal vesicles.

CASE I.—R. M., white, age 27, single. Alkaline bacteriuria of renal origin. Chronic prostatitis. Intermittent phosphaturia. Organism: *Staphylococcus albus.*

He was seen for the first in September, 1907, complaining of cloudy urine and intermittent attacks of burning in the urethra and frequency of urination. Seven years ago he had a sore on his penis but this was not followed by any secondaries. Six years ago he had contracted gonorrhœa following which he had a discharge which persisted for some months, but finally ceased without any special treatment. Four years ago he noticed that his urine had become cloudy, but this was attended with no special symptoms at that time. This cloudiness of the urine has been persistent and at intervals he has suffered from slight attacks of frequency and severe burning in the urethra on urination. During these exacerbations considerable quantities of a white sand-like substance have always been passed. In the interval between these attacks when this white sand-like material is not excreted he is comfortable and entirely free from symptoms. The general nutrition has always been maintained and he has never had any pain in the region of the kidneys or along the course of the ureters. He was first seen during one of the attacks above noted. On physical examination his chest and abdomen were normal. There was no tenderness over the kidneys or ureters. The urine when voided in three glasses was quite cloudy in all of them and a white granular sediment settled to the bottom. The urine was slightly but definitely alkaline and negative for albumin and sugar. The addition of acetic acid caused some slight clearing of the urine, but it still remained definitely hazy. The microscopic examination of the precipitate which was composed of small whitish granular masses showed that it was a mixture of amorphous and triple phosphates with large masses of a Gram staining coccus. With the exception of the first glass which contained a few pus cells the urine was entirely free from pus. Cystoscopic examination of the bladder showed no sign of inflammation, the mucosa being perfectly normal. On rectal examination the prostate was slightly enlarged and somewhat indurated in areas, while the prostatic secretion contained a fair number of pus cells, but also numerous normal elements. The seminal vesicles were small and soft.

He was instructed to drink large quantities of water and was given thirty grains of urotropin a day. Within a short time the phosphaturia disappeared, but a distinct haziness of the urine still remained. It was then decided to catheterize both ureters to determine if the organisms were not being excreted from the kidneys. Catheters were introduced, about 4 cm. on each side, and the first 5 cc. collected was discarded. About 10 cc. was then collected from each ureter. The urine from both ureters was apparently clear with the exception of small floating particles. On being centrifugalized and examined microscopically it was found that these small grayish masses were clumps of cocci, but no leucocytes were observed. The same condition was present in the urine from both kidneys and the reaction of each was slightly acid. Cultures from each catheterized specimen as well as from the bladder urine showed a pure growth of *Staphylococcus albus.* Urotropin was then increased to sixty grains a day, and for a short time the urine became almost entirely clear, but the cloudiness soon recurred notwithstanding the large doses of urotropin. Subsequently both ureters were catheterized and the pelvis of each kidney was washed with a 1 per cent solution of protargol. This procedure was repeated several times at weekly intervals, but as no improvement was noted following pelvic lavage it was discontinued. In January, 1908, the *Staphylococcus albus* was again isolated from the urine in pure culture and a vaccine prepared. The vaccine was made from an 18-hour agar culture. He has been given weekly injections of 200 to 400 million organisms during a period of three months, but the vaccine has apparently not had the slightest effect. At the present time the infection is still present. While taking urotropin he is comfortable and free from phosphaturia, but on discontinuing it for any length of time the phosphaturia returns with its uncomfortable symptoms.

CASE II.—P. S., white, age 24, married, E. 11,497. Acid bacteriuria of renal origin. Acute locomotor ataxia. Organism: *B. coli communis.*

He was first seen in August, 1907, complaining of slight pain on urination, some frequency and considerable difficulty in starting the flow. He gives a history of gonorrhœa six years ago which was of short duration. About three years ago he had a sore on the penis, but this was not followed by any secondaries and he has never taken any treatment for syphilis. One year ago, however, he began to develop symptoms of locomotor ataxia and this has developed very rapidly until at present he is hardly able to walk. Six months previously he had an attack of dysentery which lasted five weeks and during this attack noticed for the first time cloudiness of the urine together with some pain and frequency. For almost a year he had had more or less difficulty in starting the flow, due unquestionably to his locomotor ataxia.

Examination.—Patient is a frail sickly-looking young man with well-developed signs of locomotor ataxia. Chest and abdomen negative. No tenderness or pain over kidneys. External genitalia normal.

On rectal examination the prostate was small, soft and apparently about normal. Microscopically the prostatic secretion shows a few pus cells, but for the most part it was composed of normal elements. The urine voided in three glasses had a peculiar haziness characteristic of bacteriuria. Microscopic examination showed a few pus cells in the first glass while the last glass contained no pus cells, but an enormous number of Gram negative bacilli. The urine is acid and contains no sugar or albumin. The urethra shows no stricture and no inflammatory indurations. A catheter passes readily and withdraws no residual urine and the bladder capacity is normal. Careful inspection of the bladder mucosa through the cystoscope reveals nothing abnormal and with the exception of a slight reddening about both urethral orifices the examination was negative. He was instructed to drink large quantities of water, to take 40 grains of urotropin a day and was given daily intravesical irrigations of bichloride 1 to 60,000. The pain and frequency of urination almost immediately disappeared, and there was distinct but not entire clearing of the urine. As long as the above treatment was continued the urine remained comparatively clear, but on discontinuing urotropin it promptly returned to its first condition. It was finally decided to catheterize the ureters, and catheters were introduced, about 4 cm. on each side. The right kidney acted freely, but for some reason or other only a few cubic centimeters were obtained from the left side during a period of fifteen minutes. During this period about 20 cc. were collected from the right ureter, the first 5 cc. being discarded and only the last portion saved for examination. This last portion of urine was apparently clear to the naked eye, but numerous small particles could be seen. On microscopic examination, however, these small masses were found to be clumps of bacilli, a condition similar to Case I. As only a few cubic centimeters had been collected from the left ureter microscopic study was not considered of any value on account of the possibility of the first portion containing bacteria from the end

of the catheter which had necessarily come in contact with the vesical mucosa. A culture from the urine gave a pure growth of *B. coli communis*. A vaccine was then prepared from an 18-hour agar culture of his own organism and the urotropin was discontinued. Injections of 100 to 200 million bacilli were then given subcutaneously in the upper arm at weekly intervals. The injections have caused no local nor systemic reaction. He has received up to the present time 14 injections, but no improvement can be noted from the vaccine therapy.

Case III.—A. M., white, age 32, single. Bacteriuria secondary to posterior urethritis and chronic prostatitis. Organisms: *Staphylococcus albus* and *B. coli communis*.

He was seen for the first time in July, 1907, complaining of a "bearing down pain" in the rectum, and an aching at the neck of the bladder a few minutes after urination. He contracted gonorrhœa for the first time ten years ago and since then has had the disease several times, the last attack being three years ago. During one attack 5 years ago he developed a swelling of the right epididymis. Two years ago he contracted syphilis for which he has conscientiously taken treatment. His present symptoms date back 8 years and have been much more severe than at present. He gets up once or twice at night to void and urinates during the day about every 3 hours. He has no hesitation or difficulty in voiding and his stream is full and large. Sexual powers are good, but ejaculation is precocious. The ache at the neck of the bladder soon after voiding and the "bearing down pain" in the rectum were the symptoms for which he sought relief.

Examination.—Patient was a rather neurotic looking young man, but in good physical condition. His chest and abdomen were negative. The external genitalia were normal and there was no urethral discharge. The urine when voided in three glasses showed slight cloudiness in the first glass while the second and third glasses were clear.

On rectal examination the prostate was somewhat enlarged and the consistency of the gland as a whole was quite firm. The surface was rather smooth. There were no peri-prostatic adhesions. The prostatic secretion was rather scanty and almost entirely composed of pus cells.

He was treated by prostatic massage, dilatations of the posterior urethra, etc., for several weeks when it was noted that the urine had become slightly hazy, but no urinary irritability had appeared. Microscopic examination showed that the cloudiness was due to a coccus. Large doses of urotropin were immediately ordered, but had only a partial effect upon the cocciuria. Cultures from the urine gave a pure growth of *Staphylococcus albus*.

The bladder upon cystoscopic examination appeared perfectly normal. This condition of the urine persisted unchanged for several months, the reaction varying somewhat from a slightly acid to a slightly alkaline condition without the formation of any phosphatic deposits. The urine, however, on standing became in a few hours strongly alkaline with a heavy precipitation of phosphates. The presence of the infection seemed to produce no special symptom.

A few months later a secondary invasion with a bacillus was noted and this in culture proved to be the *B. coli communis*. The invasion of the colon was productive of no special change except increased cloudiness of urine. Repeated cystoscopic inspection of the mucosa never revealed any evidence of inflammation. Catherization of both ureters performed while the condition was a pure cocciuria and later after the secondary invasion with the *B. coli communis* showed the urine from both kidneys entirely clear and microscopically negative for organisms. Urotropin, instillations of silver nitrate, prostatic massage and vesical irrigations failing to have any effect upon the bacteriuria a vaccine was prepared from his own organism. He was first given injections of 100 to 300 million of *Staphylococcus albus* at weekly intervals during a period of two months without, however, any apparent diminution in the number of staphylococci in the urine. The injections of the staphylococcus vaccine were then discontinued and injections of his own colon in doses of 100 to 200 million were instituted. He has received so far about 10 injections. The vaccine injections have not produced the slightest effect upon the bacteriuria.

Case IV.—S. D., white, age 30, married. Alkaline bacteriuria. Chronic posterior urethritis, prostatitis and vesiculitis. Phosphaturia. Organism: *Staphylococcus albus*.

Admitted July, 1907, complaining of pain in the right kidney region and the passage of large quantities of sand accompanied by severe burning pain in the urethra. He contracted gonorrhœa about 5 years ago and had a discharge for one year. He dates his symptoms to the attack of gonorrhœa 5 years ago. His urinary symptoms are intermittent, at times he voids at fairly normal intervals and again has attacks when he micturates as often as 5 to 10 times at night and every few minutes to a half hour during the day. During these exacerbations he has noticed that the urine has increased cloudiness and that considerable quantities of sand are passed. He suffers a great deal from a severe aching pain in the perineum and a constant dull ache over the right kidney region. This pain in the kidney region, however, does not radiate and does not simulate very closely renal colic. The general health has remained good although patient states that his sufferings at times are agonizing.

Examination.—Patient is a well-nourished man. Chest and abdomen are negative. There is no tenderness over either kidney. External genitalia are normal. There is no urethral discharge. The urine when voided in three glasses is cloudy in all three and a considerable white granular precipitate forms. On addition of acetic acid a large part of the cloudiness disappears, but a distinct haziness still persists. Microscopic examination of the first glass shows a few pus cells, while the third glass shows no pus, but enormous numbers of a Gram staining coccus.

Precipitate is composed of triple phosphates. The reaction of the urine is alkaline and it contains no sugar or albumin.

Rectal examination.—The prostate was enlarged, indurated and quite nodular. The induration is especially marked at the upper pole and continuous with enlarged and indurated seminal vesicles. The secretion obtained from the prostate and the seminal vesicles shows a large number of pus cells. The urethra has no stricture or areas of induration.

The cystoscopic examination shows that the bladder mucosa is entirely normal as is also the prostatic orifice.

Under prostatic massage, dilatations of the posterior urethra, instillations of silver nitrate, large quantities of water and large doses of urotropin the patient soon showed marked improvement in his symptoms. While taking large doses of urotropin the urine was usually neutral or slightly alkaline and he was entirely free of the distressing symptoms accompanying the passing of the sand. The bacteriuria persisting despite all treatment the ureters were catheterized, the catheters being introduced about 4 cm. on each side as in the other cases and the first portions of the urine discarded, and only the last portions collected were saved for examination. The urine from each side was perfectly clear, had a slightly acid reaction and was negative for organisms or pus cells. Cultures which were made from the urine gave a pure growth of *Staphylococcus albus*. A vaccine was prepared from this as in the other cases and doses from 100 to 300 million were given at weekly intervals during a period of 4 months. The vaccine, however, has proved absolutely valueless up to the present time, and has been discontinued.

In the four cases reported some variety of the *Staphylococcus albus* was the offending organism in three, being once

associated with the *B. coli communis*. In one case the *B. coli communis* was found alone. The colon is apparently the organism which has been found most frequently by the various observers. In the series of cases reported by Rovsing the *B. coli communis* was the organism found in every instance. Predohl as a result of his observations concluded that bacteriuria was always due to this bacillus. However, bacteriuria due to other organisms, particularly varieties of the staphylococcus have been observed, while three of the four cases above reported were due to cocci, all varieties of the *Staphylococcus albus*. It is well known that both the *Staphylococcus albus* and the *B. coli communis* may have little or no pathogenicity, and this will explain to a certain extent the growth and persistence in the urinary tract without producing any inflammatory phenomena. We have never seen a case of bacteriuria due to the more pathogenic organisms such as the *Staphylococcus pyogenes aureus* or any of the proteus group, nor have we found any such case reported. It is very probable that the more pathogenic organisms when they gain a foothold soon produce a reaction on the part of the tissues and the picture becomes an inflammatory one. Melchior (8) has shown that the mere introduction of the proteus of Heuser is sufficient to set up a violent cystitis.

The route of invasion or the passage-way through which organisms gain their entrance to the bladder is essentially the same in cystitis and bacteriuria. When the bacteriuria is persistent it is probably essential to have some focus in the urinary tract or neighboring organs which continually pours bacteria into the bladder urine. In cases where an obstruction is present with residual urine this urine may serve as a culture media, particularly so if it is albuminous. One can readily understand the persistence of the organisms in such cases without any contributing focus. Rovsing has experimentally shown that if a culture of bacteria is introduced into a normal bladder all of the bacteria will be expelled in the course of a few days, so that it would seem necessary in order to explain the persistence of bacteriuria to have some point from which the organisms gain access to the bladder.

In our four cases the condition was of renal origin in two, secondary to chronic posterior urethritis and prostatitis in one, and associated with chronic urethritis, prostatitis and vesiculitis in the other.

In the two cases of renal origin it is probable that a focus of infection of mild grade was present in the superior urinary tract. Just what the nature of the lesion in these cases may be it is impossible to say as no microscopic study of the renal tissue has been made in cases of this character, as far as we have been able to determine. In the cases reported by Krogius (5) and Stenbeck (9), in which an autopsy was performed, the bladder and kidneys were said to be normal in appearance but unfortunately no microscopic examination of the tissues was made. It seems fairly probable that an apparently healthy kidney can excrete organisms picked up from the general circulation, and in this way give rise to a temporary bacilluria. That organisms, however, in enormous numbers and over a period of months or years could be strained through the kidneys without any focus in the kidney itself is highly improbable.

In the type of case secondary to infection of the prostatic urethra, prostate and vesicles the method of invasion of the urine by the organisms is not inexplicable. The bacteria having gained a foothold in the posterior urethra can readily infect the bladder urine from this point. There is without doubt considerable difference between the resistance to infection offered by the bladder and that offered by the posterior urethra. The posterior urethra is a favorable soil for organisms while the bladder displays enormous powers of resistance. The explanation of this lies partly in the different character of the epithelium which each possesses. It is probable that the squamous type of cell which forms the superficial layer of bladder epithelium is largely responsible for its resistance to infection. In the anatomical structure of the prostate particularly suited for harboring infection, and in the delicate cylindrical epithelium of the posterior urethra, we have a combination peculiarly favorable for the maintenance of a bacterial invasion. There is one form of bacteriuria which has been of considerable interest to us and which occurs as a complication of prostatic massage. It is usually a slight affair and yields promptly to treatment, but occasionally such a happy termination of the complication does not occur.

Case III is an unfortunate example of the rebellious character which it may assume. It is impossible to say in any one case whether the organisms travel directly through the rectal wall into the vesical cavity, or from the rectum through the lymphatics to the prostate, subsequently infecting the prostatic urethra or whether organisms already in the prostate are forced by prostatic massage into the prostatic urethra and from this point infect the urine.

In several cases in our experience in which a careful microscopic study of the strained prostatic secretion failed to reveal any organisms a bacteriuria shortly afterwards developed. Furthermore in a case of nocturnal enuresis in a boy fourteen years of age in whom there was practically no development of the prostate and no sign of inflammation, a mild cystitis developed following a light massage. It is probable in many instances that infection can come directly from the rectal mucosa, possibly the result of some injury to the mucosa or the lymphatics. Wreden (10) considers that direct penetration of bacteria through the mucous layer of the rectum can occur. His opinion is based upon a series of experiments made on male rabbits. He injured the rectal mucosa by means of an irritant or by scraping off the epithelium, and he found that the rectal lesions provoked a cystitis only when the lesion was situated at the level of the prostate or higher. Lesions lower down had no influence. The organisms found in the bladder were those usually present in the intestines. In certain instances easily recognizable bacteria were introduced into the rectum and these were subsequently recovered in the urine. When he introduced oil or vaseline, the rectum having been denuded of its epithelium, these substances were subsequently discovered in the urine. His experiments were not conclusive

as to whether the infection was through the medium of the prostate or directly from the rectum to the bladder.

Bacteriological researches of Notthafft (11), Young (12), Stevens (12) and myself (12) have shown that occasionally even when the prostatitis is primarily of gonorrhœal origin secondary invaders may be present in the prostatic secretion. It is not at all improbable that such an infected secretion when forced into the prostatic urethra may be the starting point of a bacteriuria or even cystitis. For this reason vesical irrigation following massage of the prostate is a procedure long recommended and practiced by Dr. Young. As an additional precaution the prostatic secretion should be stained and carefully studied for organisms before systematic massage is done. If secondary invaders are present the patient should be kept upon moderate doses of urotropin while under treatment.

Symptoms.—Acid bacteriuria is practically devoid of symptoms. At times there may be slight burning and frequency of urination due to irritation of the prostatic urethra, but this is seldom of any severity. There is only one thing characteristic of the condition and that is the appearance of the urine. The urine is cloudy, but the cloudiness is similar to that of a bouillon culture. No particles or definite masses are visible as in cystitis or when the turbidity is due to pus. At times it has a peculiar opalescence, no precipitate forms on standing and when centrifugalized in the ordinary way no or little sediment is formed. The usual chemical examinations disclose nothing and it is only on microscopic examination that the true nature of the urinary condition becomes evident. It is then seen that the peculiar character of the urine is due entirely to the presence of enormous numbers of bacteria. In cases of cystitis it is seldom that the fresh urine contains such a myriad of organisms as are seen in bacteriuria. In the first instance the protective forces of the body are brought into play in their fight against the invading organism inhabiting and reducing their growth while in the latter instance not being irritating to the tissues they grow luxuriantly more in the nature of saprophytes than parasites.

It is interesting that in the two cases due to the *Staphylococcus albus* the bacteriuria was alkaline and associated with the presence of large quantities of phosphates. In the third case where the *Staphylococcus albus* was associated with the *B. coli communis* the urine usually varied from a slightly acid to a slightly alkaline condition, but on standing quickly became alkaline with a deposition of a large amount of phosphates. Comparatively few observations of alkaline bacteriuria have been reported and the literature upon this point is scanty. Escat (13) has seen two cases both due to a staphylococcus, but no cultures were made. His cases are quite similar to ours, the condition had been present for years and resisted all treatment. The alkalinity is not due to an augmentation of phosphates in the urine but probably to a decomposition of the urea by the organisms with the formation of ammonium carbonate rendering the urine alkaline. This change in the reaction of the urine results in the precipitation of phosphates.

That the alkalinity of the urine was directly due to the action of the micro-organisms seems positive. In the first place the urine obtained from the kidneys was either neutral or slightly acid while the bladder urine was alkaline. Furthermore when the growth of organisms was inhibited by the large doses of urotropin the bladder urine became neutral or slightly acid.

In the Case III, where both the *Staphylococcus albus* and *B. coli communis* were present, the reaction varied. When microscopic examination showed the staphylococcus in greatest abundance the urine was alkaline while with an excess of the bacillus the urine was acid or neutral.

In all of the cases reported in the literature, due to the *B. coli communis*, the urine was always said to have been acid.

Whether the invading organism is an acidifier or an alkalinizer is of considerable importance to the patient. When the bacteriuria is an acid one symptoms may be entirely absent or at most of a mild grade, while in the alkaline bacteriuria the symptoms resulting from the passage of the phosphatic material may give rise to most distressing symptoms.

Treatment.—In most cases of bacteriuria the condition rapidly clears up with the administration of urotropin or even without the institution of any treatment. Where, however, the infection has been present for any length of time the prognosis is distinctly unfavorable. It is first essential to determine, if possible, the focus which is supplying the organisms to the urinary tract and to direct attention to the elimination of this focus.

Preyer (14) succeeded in curing some cases of rebellious bacteriuria by directing his treatment to an associated vaginitis. In cases secondary to inflammation of neighboring organs as the prostate, etc., an effort should be made to eradicate this inflammation. Irrigation of the posterior urethra, instillation of silver nitrate, dilatation and prostatic massage may be tried, and although it may not be possible to entirely eradicate the disease as in the cases which we have cited, much can be done towards decreasing the amount of infection and relieving the symptoms.

In the cases of renal origin very little can be done. Pelvic lavage may be tried. Urotropin, plenty of water and attention to the general nutrition are the measures of most value.

The results of vaccine therapy have been most discouraging. The patient's own organism has been employed in each case and the vaccine has been injected over a period sufficiently long to test its efficiency.

In conclusion we may say that:

1. Bacteriuria when persistent is always due to organisms of slight pathogenicity.

2. Bacteriuria due to the *B. coli communis* produces an acid urine. When due to the *Staphylococcus albus* it may be alkaline and give rise to a troublesome phosphaturia.

3. It is secondary to some focus in the urinary tract or neighboring organs.

4. It may persist indefinitely despite all treatment without producing any inflammatory reaction on the part of the vesical mucosa.

5. The results of vaccine therapy are entirely negative.

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CORRESPONDENCE.

BALTIMORE, November 18, 1908.

TO THE EDITOR OF THE BULLETIN OF THE JOHNS HOPKINS HOSPITAL.

Sir: In the November number of the BULLETIN there is an article by Dr. John A. West, entitled: "A Method for Complete Enucleation of the Tonsil."

The operation described as a "New Method" is very similar to one described by me in a short paper under the title, "A Simple Method of Excision of the Faucial Tonsil," which I read before the Laryngological Section of the Medical and Chirurgical Faculty of Maryland on March 22, 1907. This paper was afterwards published in the Journal of the American Medical Association, May 25, 1907, page 1761, a reprint of which I herewith enclose. Dr. West lays stress upon the difference between his operation and "any so far described"; namely, the freeing of the tonsil from the posterior pillar, as the first step in the operation.

In my reprint on page five, I make the statement that, "Should the posterior pillar be adherent, ... the knife is taken in the left hand and with the forceps in the right, the tonsil is pulled forward and outward, at the same time severing its adhesions with the pillar (Fig. 4)."

It was only necessary to call attention to this simple step because the object of this preliminary incision (when necessary) has for its purpose freeing the tonsil from its attachments to the posterior pillar in its upper half or third only, and within the supratonsillar fossa, directly under the arch, at which point the tonsil may be so deeply situated as to require delicate dissection.

The tonsil is seldom in contact with the lower half of the posterior pillar sufficiently to make a dissection from it necessary or even possible.

In the operation as described in my paper, and so nearly described by Dr. West, I claimed nothing new, except making it less difficult and complex by the use of fewer and simpler instruments.

My colleagues at the Baltimore Eye, Ear and Throat Charity Hospital, as well as other laryngologists, have been doing tonsillar excision by this method in various hospitals of this city, including the Hopkins Hospital, for the last four or five years, and very similar operations to the one under discussion have likewise been done by other surgeons for many years.

I think a writer should look well into his subject before publishing an operation as his own, which to say the least bears such a close resemblance to that of another operator. So far as I can see the only surgical difference is that I dissect entirely from above downward and Dr. West works partly from below upward, in my opinion a dangerous procedure.

There are a number of statements to which I should take exception were it my purpose to pass an opinion upon "Dr. West's Operation." However, when Dr. West tells us "I have been able to perfect a method which is different from any so far described, and which I have found to be not only entirely satisfactory, but preferable," I am obliged to enter a strong protest.

THOS. CHEW WORTHINGTON.

BALTIMORE, November 25, 1908.

TO THE EDITOR JOHNS HOPKINS HOSPITAL BULLETIN.

In reply to your query as to the similarity between the method of excision of the tonsil described by Dr. Thos. Chew Worthington in the Jour. Am. Med. Assoc. for May 25, 1907, and "A Method for Complete Enucleation of the Tonsil," which I published in the Bulletin for November, 1908, I may say we claimed only for our procedure that it "possesses two distinctive features: (1) The dissection of the tonsil *beginning at the posterior edge* and proceeding anteriorly. (2) The control of the hemorrhage by specially constructed clamps."

As our illustration (Fig. 1) plainly shows this *posterior dissection*, as the *first step* in our procedure, is continued to a considerable depth behind the tonsil, in some cases in fact enucleating it perhaps one-fourth from its bed in the *sinus*

tonsillaris. When the tonsil is adherent, this procedure, of course, dissects it loose from the posterior pillar; where it lies free between the pillars, the knife in this case passes between the tonsil and the pillar. The *object* of this *posterior dissection* is to finish the *dangerous part* of the enucleation *at the start,* before the *hemorrhage obscures the landmarks.*

On the other hand, Dr. Worthington, in his publication cited, shows us clearly how beginning by dissecting the tonsil free in the region of the superior pole, "severing the attachments to the fossa," as he describes it, he then proceeds *anteriorly,* and he tells us, "The tonsil is then seized at a lower point, but pulled on very lightly, while the knife is drawn firmly down its length just within the *anterior pillar.*" From his illustrations and text it is perfectly evident that he begins his operation by *anterior* dissection. His procedure belongs obviously among those methods which we in our article describe as "dissection by cutting the tonsil loose from the *anterior* pillar *first,* and then proceeding backwards." This anterior dissection we *never* do.

Continuing his anterior procedure the Doctor finds himself towards the end of his operation at the posterior part of the *sinus tonsillaris* (*his Fig. 4*). This posterior region, as we have emphasized, we dissect free at the start (*our Fig. 1*).

JOHN M. WEST.

PROCEEDINGS OF SOCIETIES.

THE JOHNS HOPKINS MEDICAL SOCIETY.

November 2, 1908.

Meeting of the Johns Hopkins Hospital Medical Society, Dr. Norton presiding in the absence of Dr. Finney, president of the society.

I. Report of Cases. DR. RICHARDSON.

Dr. C. H. Richardson reported five gynæcological histories:

CASE I.—*Bilateral Congenital Cystic Kidney. Myoma Uteri. Operation. Recovery.*

Mrs. H. (Gyn. No. 13,674), white, 44 years old, was admitted March 19, 1907, complaining of "fibroid growths on the womb."

History.—The family history was unimportant. For the past fifteen years she has suffered from shortness of breath on exertion, and for several years she had noticed some slight puffiness of the face, and œdema of the feet and ankles. She has been married 24 years, and given birth to two children, both of whom died. She has had two miscarriages. Her pregnancies, labors, and puerperia were all normal.

The onset of her present illness dates from August, 1906, at which time a period of amenorrhœa began and continued for five months. Then, at the regular time for her menstrual period, she began to bleed very profusely and had a "flooding." About the same time she noticed her abdomen becoming larger, and thought she was pregnant. In January, 1907, she consulted a physician who told her she had a fibroid tumor of the uterus. This tumor, she thought, had grown rapidly larger, but the only symptom complained of was a slight "pulling" on the right side of the abdomen.

Physical examination demonstrated that the patient was poorly nourished, with a moderate grade of anæmia, and considerable œdema of the lower extremities. There was no heart-disease to account for the œdema. The abdomen showed a slight general fulness, a little more marked over the upper half, and no other abnormality was to be made out on observation. But in both hypochondriac regions I could feel an irregular, oblong, nodular mass projecting downwards from the costal margin a distance of about 8 cm. on the left side, and about 20 cm. on the right side. Both tumors were quite firm, and movable to a moderate degree. No connection between them could be detected. They extended well back in the flanks, occupying the position of the kidneys; the left tumor being about twice, and the right one about four times the size of a normal kidney. The kidneys could not be detected as attached to or separate from the tumors. Slight tenderness was present on deep pressure over the mesial surface of the tumor on the right side. The percussion note over both tumors was dull. Splenic dulness was normal. The dulness on the right side was not continuous with that of the liver. Both tumors descended on inspiration. A diagnosis of bilateral congenital cystic kidney was made.

The patient was seen on the following day by Dr. Kelly, who confirmed the findings already described. On pelvic examination he found a fibroid uterus in retroposition, and enlarged only to the size of a 2½ months pregnancy. On cystoscopic examination he found the bladder normal. He catheterized the right ureter, from which 15 cc. of urine flowed in two minutes, before the normal intermittent flow began. Urine from the left side was collected transvesically. Comparison of the urine from the two sides showed no noteworthy difference. Examination of the mixed 24-hour urine showed a low specific gravity (1010-1020), acid reaction, faint trace of albumin, no sugar, a few hyaline casts, no blood nor pus; urea 7 to 9 gm. to the litre. The total output varied between wide limits.

Dr. Kelly strongly advised against operation, explaining to the patient the harmless nature of the fibroid tumor so long as it did not grow rapidly and produced no symptoms. He also impressed upon her the gravity of an operation with the existing kidney condition. The patient's determination to have the uterine tumor removed at all hazards remained unchanged, and she insisted that it should be done.

Operation.—Dr. Kelly operated on March 25, resecting the uterus, with a wedge-shaped portion from its body, together with the fibroid tumor, and suspending the remainder of the organ beneath the bladder in order to support a cystocele. The pelvic floor was restored. Examination of the kidneys through the abdominal incision showed an enlarged right kidney, extending far up under the ribs, made up of multiple cysts, the largest measuring about 6 cm. in diameter. The organ was about five times normal size. The left kidney showed the same condition, and was about three times normal size. The cysts on it were all smaller and more uniformly distributed.

The patient stood the operation well. The convalescence was entirely uneventful, and she was discharged April 13, on the 20th day after her operation.

Summary.—The chief points of interest in the case are: First, that with bilateral congenital cystic kidney the patient has passed safely through four pregnancies, giving birth to two full-term children, and reached the age of 44 without any renal symptoms, either physical or mental. Second, that a small fibroid tumor of the uterus, lying wholly in the pelvis, only discoverable on bimanual examination, and giving no symptoms, should have so impressed the patient as to prompt

her to make a long railroad journey to the hospital, and to insist upon operation against Dr. Kelly's advice. Finally, that the patient withstood a major abdominal operation as well as the average patient, in spite of the advanced disease of the kidneys. A communication from both the patient and her physician received only a few weeks ago, states that she is enjoying excellent health, is attending to all her household duties for a family of five, and suffers only from a "pressing feeling" in her right side at times.

CASE II.—*Recovery Following the Administration of Inspissated Ox Bile in a Case of Drainage of the Common Bile Duct.*

Mrs. S. (Gyn. No. 13,659), white, aged 56, was admitted on March 15, 1907, complaining of pain in the right side of the abdomen.

History.—The family history was unimportant. She has had pneumonia four times, and has undergone three major surgical operations. The first of these, eight years ago, was for a vesical calculus removed by crushing and irrigation. The second three years later, was a laparotomy for supposed appendicitis, but she was afterwards told that she had an abscess of the liver and that the appendix was not found. The third operation done here in 1904, was a left nephrotomy, with removal of a renal calculus.

The present illness began seven years ago with severe cramp-like pains in the right side of the abdomen, especially in the hypochondriac region, radiating to the right side of the back and under the shoulder blades. She had no nausea, vomiting, or fever, but thinks she had a chill. This attack was followed by a similar one three months later. Since then they have gradually become more frequent and severe; often associated with nausea and vomiting, and usually a chill, but very little fever. During the attacks the patient noticed a tender lump bulging through the upper portion of the laparotomy scar in the right hypochondrium. She thought she had been jaundiced at times after the attacks, but no history of clay-colored stools, or other positive evidence of this fact could be obtained. She had lost considerable strength and weight, and recently suffered constantly from pain in the right hypochondriac region.

Examination made on admission showed an emaciated, feeble, elderly woman, with well-marked general arterio-sclerosis, and a moderate grade of emphysema. The abdominal walls were everywhere soft and very relaxed; and there was no tenderness. A scar 16 cm. long was present in the right hypochondrium, from the upper part of which bulged a tumor about the size of a lemon, when the patient lay in the recumbent posture. The size increased on coughing, or when the patient sat up. It could not be reduced completely, and was only slightly tender on manipulation. The lower edge of the liver, the spleen, and the kidneys could not be felt. The temperature was normal; the pulse 70-80; and the leucocyte count 13,600.

The patient had a mild acute attack of abdominal pain on the day following admission. The pain was located in the right hypochondriac region; the tumor increased in size noticeably, and became quite tender. There was also slight nausea, but no chill. The temperature was only 99° F. and the pulse 84. No distension developed, nor was there any visible peristalsis. No jaundice was present, and the stools were normal in appearance. Twenty-four hours later, however, the patient developed a distinct jaundice. A diagnosis of stone in the common bile duct was made.

Operation by Dr. Kelly on March 21, 1907. He found the gall bladder slightly distended, adherent to the old scar, and contained in the hernia-sac bulging through its upper part. The gall bladder was also adherent to the stomach and small bowel. No gall stones were felt in the gall bladder, which was not opened; but one large and two small stones were removed from the common duct where they had become incarcerated, necessitating an opening of the duct for their removal. The bile looked clear and normal, and no pus was present. A drainage tube was placed in the common duct.

Post-operative Course.—Until the fifth day following the operation the patient's condition was most satisfactory; the drains had been partly removed without untoward effects. The flow of bile was very free, averaging 800 to 900 cc. in 24 hours. The jaundice had promptly cleared up, and there was no troublesome oozing of blood. On this day I noticed that the patient was a little drowsy, and seemed somewhat restless and nervous for which there seemed to be no accounting. Examination of the catheterized urine showed a distinct trace of albumin and a considerable number of leucocytes; otherwise it was negative, but the total output was only 520 cc. during the previous 24 hours. It was also discovered that the patient was using snuff freely, without our knowledge. The snuff had an odor very like opium, so that I was inclined to attribute the drowsiness to its use. Its use was at once stopped. A successful effort was made to increase the urinary output and to keep the bowels well opened.

On the seventh day, however, after a somewhat restless night, she complained of abdominal cramps and of nausea. The bowels were moving freely, and examination of the abdomen was negative. She was quite irritable at times. The temperature had never been above 100.5° F. since operation, and for the past two days had been normal. During the next three days her condition gradually became worse. She took her nourishment poorly. She was occasionally irrational, especially during the night, becoming very much excited and trying to get out of bed. She seemed very weak. The pulse was of poor quality, and the temperature subnormal. On the tenth day her condition was decidedly unsatisfactory.

The developments of the next few days necessitated free stimulation. The patient was irrational most of the time, and frequently lapsed into a profound coma from which it was difficult to rouse her. She was voiding well, and the urinary examination failed to reveal anything to account for her condition. She had frequent involuntary stools, mostly clay-colored, although some of them began to show a trace of brown, but they continued extremely foul. Her breath was sour and offensive. The sinus discharged bile very freely. The rectal temperature was subnormal, and the extremities cold. She took liquid nourishment fairly well when forced, but was usually excited and restless, with delusions of persecution when aroused. She could not retain nutritive enemata, so that by the night of the 13th day, in spite of repeated infusions, and liberal use of brandy, whiskey, and strychnia, it looked as if she would die. Believing from a careful review of her symptoms that her grave condition might be due to the lack of bile in the intestine, 4 gr. of inspissated ox gall were given to her during the night, as well as a nutritive enema which was retained. The next morning, the 14th day of her illness, her condition seemed slightly better; her temperature had risen to 99.6° F., the pulse was stronger and she took her nourishment better. The ox-gall pills were continued and from this time on her convalescence was uninterrupted and she was discharged well on the 24th day after her operation.

Comment.—Whether or not the ox gall was responsible for this patient's recovery, it is impossible to say. Certainly it was a most remarkable coincidence that her first signs of improvement began exactly at the time one would have expected effects from the administration of the ox gall. I have seen one other case, and have heard of two more, all in this hospital, following gall-bladder operations with free drainage of bile, which developed marked mental symptoms; they all three died. I submit this history with the hope that the treatment of in-

spissated ox gall may be tried in similar cases and its value determined.

CASE III.—*Large Renal Calculus Producing Symptoms and Signs of Acute Appendicitis. Diagnosis Established from Cystoscopic Findings. Operation. Recovery.*

Mrs. L. (Gyn. No. 13,611), white, age 26, was admitted on February 23, 1907, complaining of pain in the right side of the abdomen and back, and of irregular menstruation.

History.—The important points in the family history were that her father died of cancer of the stomach, at the age of 49; and that one maternal uncle died of pulmonary tuberculosis.

The personal history contained several points of interest. About eight years prior to her admission she had a severe cough which persisted for several months, with considerable expectoration, on one occasion streaked with blood. For the past six years she has been entirely free from any pulmonary symptoms. She has grown quite stout in recent years. Her menses have always been irregular, recurring at intervals of two to three months, attended with severe dysmenorrhœa; the pain is located chiefly in the right lumbar and iliac regions. She has been married six years; but has had no children. One miscarriage occurred seven months after marriage at the third month of pregnancy. This was followed by chills and fever, and she was ill for five weeks, and has never been entirely well since.

The patient attributes her present illness to and dates it from the miscarriage. Since then she has suffered from irregular and scanty menstruation, with intense dysmenorrhœa; the pain of a dull-aching character constantly being located in the right iliac fossa and back. One night in March, 1906, she was awakened at 2 a. m. by an agonizing pain in the right iliac fossa, which was most intense in the region of McBurney's point. She vomited repeatedly; had fever, but no chill. The pain did not radiate. Morphia was administered by her physician; and she was confined to her bed for one week. In June, 1906, she had a second similar attack, which came on at bedtime with violent pain in the right iliac fossa, nausea, and vomiting. She noticed no blood nor anything unusual in the urine after either attack. There was no bladder disturbance. She was never jaundiced, and gave no history of clay-colored stools. Following each attack she menstruated, although her regular period happened to be due at the time of each one. She has had no further acute attacks, but has constant discomfort in the right lower abdomen and back, aggravated by jarring. A diagnosis of appendicitis was made by her physician, who had seen her in both acute attacks, and who sent her to Dr. Kelly for an appendectomy.

Examination.—The patient looked unusually robust, was large, and rather stout. The abdominal walls were quite thick. The respiratory movements were free. On gentle palpation the abdomen was everywhere soft and relaxed; on deep palpation there was definite tenderness and muscle rigidity on the right side, most marked just over McBurney's point; but there was no muscle spasm. The lower pole of the right kidney could be indistinctly felt on deep inspiration, and there was slight tenderness complained of when an attempt was made to grasp the organ on bimanual examination. The gall bladder, liver, and spleen seemed normal on palpation and percussion; and no mass nor tenderness in the abdomen was to be made out. The temperature and pulse were normal. The urine contained a few leucocytes, but was otherwise normal. The pelvic organs were normal, and the ureters were not palpable. In other respects the physical examination was negative.

A diagnosis of chronic appendicitis was made, and the patient was prepared for operation; a preliminary examination of the urine showed a few blood cells, and a large number of pus cells. These findings led to a cystoscopic examination before any operative procedures were taken.

Cystoscopic Examination.—Except for a little reddening and mammillated appearance over the trigonum, the bladder was normal. A large size wax-tipped renal catheter was then introduced into the right ureteral orifice and carried up into the pelvis of the kidney without difficulty. No urine flowed from the catheter. On injecting normal salt solution into the pelvis, 23 cc. instead of the normal 6-10 cc. were injected before any discomfort resulted. This amount, however, brought on a sharp attack of pain, which the patient promptly and voluntarily identified as identical in every respect with the pain in two acute attacks described. After detaching the syringe from the end of the catheter, there came a free flow of turbid, bloody fluid from the pelvis. On withdrawing the catheter, a tiny, dark-colored scale fell from the eyelet into the urine glass, which on microscopic examination proved to be a piece of calculus. Examination of the wax tip of the catheter showed that it was deeply gouged. The urine from the left kidney was normal. Thus a positive diagnosis of renal calculus was made.

Operation.—Dr. Kelly exposed the right kidney through the superior lumbar triangle, and removed a large calculus, filling the pelvis.

The convalescence was uninterrupted, and the patient was discharged well on March 16, after a stay in the hospital of twenty days.

Comment.—This case shows how a renal calculus may precipitate attacks exactly similar to those of acute appendicitis. Further, it illustrates the value of cystoscopy and catheterization of the ureters. Finally, it shows the great importance of careful routine examination of the urine. The discovery of an occasional red blood cell and a few scattered pus cells led to a correct diagnosis.

CASE IV.—*A Large Pus Kidney Closely Resembling a Splenic Tumor. Diagnosis. Operation. Recovery.*

Mrs. J. S. (Gyn. No. 14,530), white, age 42 years, was admitted on January 25, 1908, complaining of pain in the left side of the abdomen.

History.—The family history was unimportant. The patient's general health had always been good. She had scarlet fever and diphtheria as a child and typhoid fever six years ago. Thirteen years ago she had an attack of so-called malaria, with definite shaking chills recurring every two days. This attack lasted nearly all summer, and left her with what she called "inflammation of the spleen," which has persisted ever since, and for the relief of which she came here. During the illness she noticed no swelling of the left side of the abdomen, but she suffered intense paroxysmal pain below the left costal margin, followed by nausea and vomiting, chill, fever, and sweat. The attacks occurred two to three times a week until stopped by quinine and other medicines. Since this illness she has had recurrences at varying intervals, sometimes being free from them for months. During the typhoid fever, she had a very sharp attack of pain below the left costal margin, and since then the discomfort in this region has been more constant and severe. An attack of severe pain lasts about twenty minutes, then passes off and a dull aching pain persists until relieved by anodynes. The pain does not radiate. There is marked tenderness over the left hypochondrium during an attack, and constant soreness over this region during intervals. She had never noticed any lump or swelling in the abdomen. The last attack began two weeks ago and continued up to the time of admission. She has had no urinary disturbance at any time. She has lost some weight, but could not say how much.

Examination.—The patient was well nourished and of good color, although the mucous membranes were a little pale. The thyroid gland was enlarged but there was no evidence of derange-

ment of its function. The lungs were normal. The heart showed signs of mitral insufficiency. The abdomen was slightly full over the entire left half and a firm mass could be felt emerging from beneath the costal margin, extending obliquely across the abdomen to a point 2 cm. below the level of the umbilicus and 4 cm. to its left. The mesial border reached just to the midclavicular line. It extended well back into the left flank. The surface of the tumor was everywhere smooth, except for a shallow transverse sulcus 2 cm. below the costal margin. The consistency was uniformly quite firm. The lower border felt rounded, as did also the anterior border, and no definite notch could be made out. It was movable only to a slight degree, and on being lifted forward with the hand posteriorly, it gave the impression, on bimanual palpation, of extending deep into the flank. Manipulation was permitted by the patient, but produced moderate discomfort. The percussion note over the mass was dull, but not flat. There was no pulsation in the tumor. The pelvic examination showed no connection between the tumor and the pelvic organs. The ureters were not palpably thickened on vaginal touch. Otherwise the abdominal organs seemed normal.

The fresh blood was negative for malarial parasites. The red corpuscles appeared normal, except a trifle pale. The hemoglobin was 76% (Sahli corrected). The leucocyte count was 6000.

On January 29, I made a cystoscopic examination and except for a slight general reddening of the trigonum, the bladder was normal. The catheterized specimen of mixed bladder urine was quite turbid. Both ureters were catheterized. Comparison of the urine from the two sides gave the following results:

Urine.	Right Kidney.	Left Kidney.
Character:	Yellow, cloudy.	Greenish, yellow, thick, purulent.
Reaction:	Alkaline.	Alkaline.
Sediment:	Small amount, gray, flocculent.	Very abundant, gray, granular.
Albumin: (heat test)	Trace.	Large amount.
Sugar:	Negative.	Negative.
Urea:	16 gm. per litre.	None.
Cultures:	———	Negative.
Smears:	Negative.	Short degenerated bacilli.
Microscopic examination:	Epithelial cells, amorphus urates, triple phosphates, hyaline casts.	Pus in large amount.

On withdrawing the renal catheters, the wax tips showed no scratches. The skiagraph also was negative. The temperature and pulse had remained normal since admission. From the above findings a diagnosis of pus kidney was made.

Operation.—An intracapsular enucleation of the entire kidney, which was converted into a pus sac, was made on February 5, by Dr. Kelly.

Convalescence.—The recovery was uneventful and the patient was discharged well on March 8.

Comment.—This case is of interest chiefly from a diagnostic point of view. The history strongly suggested malaria, and the tumor closely resembled an enlarged spleen. The probabilities are all in favor of an original pyelitis, with subsequent involvement of the kidney substance and conversion into a pus kidney. Furthermore, coupled with the previous case, it emphasizes the practical value of cystoscopy to the abdominal surgeon.

CASE V.—*An Enormous Pyosalpinx Giving the Clinical Picture of a Uterine Fibroid. Operation. Recovery.*

Mrs. A. (Gyn. No. 14,513), white, age 35, was admitted January 20, 1908, complaining of pain in the lower abdomen.

History.—The family history was negative, except that the patient's husband died two years previously of pulmonary tuberculosis.

She had one child sixteen years old, and healthy. Except for an incomplete abortion eleven years ago, attributed to a severe fall down the steps, with a subsequent instrumental removal of the placenta, her personal history was that of a healthy woman.

The present illness dates from this abortion. Following this she began to suffer with severe dysmenorrhœa, the pain being of maximum severity two days before the onset of the menstrual flow. The pain was always located in the suprapubic and left iliac regions and continued as a constant discomfort between her menses. The pain and soreness had become worse recently. Also her menstrual periods recurred at three-week intervals and were excessively free and prolonged. She had had some bladder disturbance, mainly increased frequency, and occasionally painful micturition. She had noticed no tumors or swelling of the abdomen, and had lost no weight.

Examination.—The patient was a well-nourished woman, apparently in perfect health. Aside from the abdominal and pelvic findings, nothing of consequence was discovered. On abdominal examination a noticeable fulness below the umbilicus was present, and a large pyriform tumor could be easily felt, connected with the pelvic organs, and extending upwards in the median line quite to the umbilicus and shading off on either side almost to the anterior spines, down along Poupart's ligaments, and into the pelvis. The surface of the tumor was slightly irregular, but no definite nodules could be felt. The consistency was uniformly firm and rubbery. The percussion note over the tumor was flat. On pelvic examination no evidence of infection was seen externally. The cervix was high up in the vaginal vault, normal, and seemed to be continuous with a large tumor filling the pelvis and extending up into the abdomen, as already described. On bimanual examination the tumor could be lifted as a whole from the pelvis and moved freely, but this manipulation was quite painful. I was unable to differentiate the uterus from the tumor either on vaginal or rectal examination. Nor could I palpate either ovary. The examination under ether gave no additional information. The urine was negative; and the temperature showed a slight elevation to about 99.5° F.

Operation.—On January 21, I opened the abdomen through a liberal median incision, extending from symphysis to umbilicus. A large tumor at once presented in the incision, and had the typical appearance and feel of a myomatous uterus. It lay in free contact with the omentum, coils of small bowel, and the sigmoid. But its surface was perfectly smooth and shiny, and there was no trace of an adhesion to be seen. The intestines were carefully walled off with gauze and an attempt made to deliver the tumor through the incision. I discovered that it was held by a single band of adhesions about 2 cm. in width behind and extending from its surface to the peritoneum just above the pelvic brim on the left side. I applied two curved clamps to the band and then cut between them. Unfortunately, the proximal clamp slipped off and there was a tremendous gush of thick yellow pus. I controlled the leak by pressure with my hand and applied a clamp. As the general peritoneal cavity had been carefully walled off with gauze, the soiling was confined to the pelvis. The pus was carefully sponged up, and then, owing to the partial collapse of the tumor, it was quite easy to lift it out. It was an enormous pus tube, which completely choked the pelvis, and extended as high as the umbilicus. After removing the tube it

was found that both ovaries were buried in adhesions on the posterior surfaces of the broad ligaments, and had undergone complete cystic degeneration. The right tube also was sealed off and badly diseased. The uterus was normal in size and plastered to the rectum, but the large pus tube had been so pressed down on top of it that differentiation on digital examination was impossible. The uterus and appendages were removed and, after draining liberally both above and through the vagina, the incision was closed. Cultures and smears from the pus were negative.

The convalescence was normal and the patient was discharged well on February 27. A communication received from her about two months ago stated that she was in excellent health, and felt better in every way than she had for years.

Comment.—This case demonstrates several important points. It shows to what an enormous size a pus tube may attain. It also seems extraordinary that this great sac should lie in such intimate contact with the omentum, large and small bowel, without signs of old or fresh adhesions. It shows further how closely a pus tube may simulate a myoma, not only in history and clinical findings, but even at the time of operation. Until what was probably the fimbriated end of the tube was cut through, and the pus had welled out, I thought the tumor was a myoma.

II. Cases of Brain Tumor. Dr. Harvey Cushing.

Dr. Cushing presented several cases of brain tumor. The first was a butcher, aged 29, who complained of inability to stand. The striking feature was an extraordinary, oscillatory tremor of the right hand and arm. In addition he showed a palsy of the vertical movements of the eye and no reaction of the pupils to light or accomodation. There were extreme choked discs.

The complex of symptoms resembled those of the cases reported by Gordon Holmes in *Brain*, several of which at necropsy showed a lesion in the red nucleus of the midbrain. In all of these paralysis of the eye movements in the vertical direction were constant findings, in addition to a striking tremor of one or both extremities, which persisted in varying degrees of intensity during waking hours but was absent during sleep.

The tendency to fall back in this case meant possibly involvement of the superior peduncle; the oscillatory tremor pointed to the red nucleus; and finally the ocular centers in the midbrain were involved.

The second case was a boy, 16 years old, who complained of dimness of vision. One year ago he developed petit mal which became quite severe before admission. The attacks came on with stiffening of the right hand and arm and movements of the head to the left. In many of the attacks he visualized hallucinations of scenes at home—always people playing cards. He had had severe frontal headache and vomiting. Double-choked discs were found. For a year he had been disturbed by a "swishing" or "roaring" sound in the right ear. This was heard objectively on examination—a loud bruit synchronous with the pulse and heard over the right head. A soft, tender spot of craniotabes was found in the left frontal region.

This and the petit mal suggested a left-sided growth. Diminution of the sense of smell pointed to the temporal lobe. The bruit heard over the right temporal region could be accounted for by:

1. An arterio-venous aneurysm between the carotid artery and internal jugular vein;
2. A vascular sarcoma;
3. An aneurysm of a large vessel;
4. A solid tumor indenting a large artery.

A left temporal exploration was negative although the subtemporal decompression has proven beneficial.

The third case was a man admitted in March, 1908, with headache, dizziness, and failing eyesight. There were no definite localizing signs. And a subtemporal decompression was done to relieve the choked discs. For three months he worked in comfort. He returned with swelling of the discs and signs which seemed more localizing. The ataxia and increased reflexes on the left, the swaying and tremor in the hands, pointed to a cerebellar pontine lesion on the left. However, a cerebellar exploration was negative.

The fourth case, a man of 28, complained of dimmed vision and morning headaches. He gave a history of seven months of vomiting. Three months ago suboccipital headaches, dizziness, staggering, and impaired hearing in the right ear developed. Extreme choked discs, nystagmus, and a tendency to fall to the right were noted. On suboccipital exploration a benign tumor was found and removed. Following the operation a rise of temperature over a considerable period of time occurred—such as is reported by Oppenheim and Krause.

The fifth was not a tumor case. A woman was shown who had been shot by a 22-calibre rifle, the bullet entering the right temple at the lower angle of the parietal bone. The frontal lobes were evidently injured, and she was apathetic, would not speak, and would only go through a few automatic movements. The wound was repaired, a subtemporal decompression done to allow for subsequent swelling.

In the next 24 hours, the right arm was found weak and tremors developed in the right hand. A lateral skiagraph showed the bullet not far from the cranium. In a left-sided exploration a clot was found under the dura and a wound in the cortex about at the middle genu of the pre-Rolandic area, where the bullet had struck the skull after traversing the head. Stimulation here gave movement of the hands. By estimating the angle of incidence and reflection the bullet was probed and extracted. It had gone through the frontal lobe evidently causing a pathway of local œdema which may clear up.

III. Case of Acrocyanosis following Cerebro-Spinal Meningitis. Dr. F. J. Sladen.

Dr. Sladen stated that there were not many cases of simple acrocyanosis in the literature, largely because not much attention has been paid to so simple a condition which seldom causes the patient any discomfort. It assumes importance when one realizes that it is often the first stage of erythromelalgia and the more serious conditions. This and the fact that the etiology is not often so clear justified the presentation of this case.

The patient was a school-boy, 15 years old, whose first admission to the medical clinic was in May of this year. He was

brought in on the second day of an attack of acute epidemic cerebro-spinal meningitis. Twenty-four hours after the first intraspinal injection of 30 cc. of anti-meningitis serum (Flexner) the spinal fluid was sterile and the delirium, headache, and pain in the neck had disappeared. A second injection of 15 cc. caused the temperature to fall by crisis from 104° F. to normal in twenty-four hours. As is characteristic the stiff neck and positive Kernig sign persisted several days. He had no complications and was discharged on the twentieth day in good condition. His heart and lungs were negative. And no cyanosis of the extremities was noted during admission or on discharge.

Two and a half months after discharge he returned, complaining of a general pruritus of twenty-four hours' duration. He was obstinately constipated and the pruritus cleared up with purging and dieting. He himself had noticed the red color of his hands a few days previously. His hands and feet have remained bluish-red and congested. His lips and ears were also somewhat cyanotic. No cause for the cyanosis was discoverable in the physical examination. The blood picture was normal. There were no disturbances of sensation and no trophic changes. The attempt to produce red, white, and blue fingers by immersion in hot and cold water was unsuccessful. Apparently the condition is simple acrocyanosis with the cerebro-spinal meningitis as the probable etiology.

Dr. Sladen mentioned the possibility of showing the boy later as a case of erythromelalgia or at any rate a more complex neurosis of which this acrocyanosis is the first stage. In fact, already, a month and a half after the discovery of the acrocyanosis, the boy stated that the dependent position of his hands was uncomfortable and that the cold weather made some of his fingers very blue. No syncope had been evident, however, and no definite pain.

IV. The Axillary Diastolic Murmur in Aortic Insufficiency. DR. R. COLE and MR. A. B. CECIL.

This paper was published in the December number of the JOHNS HOPKINS HOSPITAL BULLETIN.

November 16, 1908.

The meeting was opened with the election of Dr. Frank R. Smith as president and Dr. Rufus I. Cole as secretary of the society for the ensuing year. In the absence of Dr. Smith, Dr. T. S. Cullen occupied the chair.

I. Fever. DR. W. G. MACCALLUM.

Dr. MacCallum stated that normally in mammals and birds an elevated body temperature is maintained with but slight fluctuations from a constant level. This constancy results from the fact that in spite of great variations in the amount of heat produced the dissipation of heat is so regulated as to bring about the retention of just enough to keep the body at or near the normal temperature. In fever there is a moderate increase in heat production but the elevation of temperature is perhaps chiefly due to changes in the action of the heat-regulating mechanism.

Heat production is almost entirely dependent on processes of oxidation, the measurement of which shows a moderate increase over the normal during fever—an increase which corresponds with the measured increase in heat production. There are, however, very marked qualitative changes in the metabolism during fever. The increased katabolism is due principally to the destruction of proteid, and not merely the circulating proteid but that of the tissues. Fat is also consumed rapidly from the tissues, and the oxidation of carbohydrates goes on quickly until all or most of the stored carbohydrate is consumed. The changes in water and mineral salt metabolism are even yet somewhat obscure and seem to be variable. The striking feature remains the excessive decomposition and excretion of proteids.

There is much evidence to show that all these disturbances in heat regulation and metabolism constitute the mechanism or are the indications of the progress of a protective reaction designed to combat the infection. It is probable that this consists in the formation of immunizing or protective substances in the elaboration of which much tissue proteid is used up and a temperature is required higher than the usual body temperature. This requires time and the reaction is almost useless against a sudden, overwhelming dose of the poison or infectious agent. But as Rolly and Meltzer have recently shown, the production of agglutinins and bacteriolytic substances is accelerated and intensified by high bodily temperature.

Fever should therefore not be looked upon as an unmixed evil—even if in itself it does some harm, it is probable that that is because of its imperfection as a mechanism, which otherwise has as its aim the protection of the body against the advance of an infectious or toxic disease.

DISCUSSION.

DR. BARKER.—The phenomena commonly before us are often the least understood. Consider consciousness and sleep. How little is known about them! The purposefulness of fever as emphasized by Dr. MacCallum is gratifying. It is important therefore not to interfere—to combat it only when it is in great excess. Compare our recent ideas of arterial hypertension.

I should like to ask Dr. MacCallum about the retention of salts in pneumonia and their excessive excretion in other febrile paroxysms. Has he found a satisfactory explanation of this?

DR. MACCALLUM, in response.—As to the salt output in malaria, it is increased during the fever. There are numerous fantastic explanations, all unsatisfactory. Rem Picci believes the salt is produced by the breaking down of red blood corpuscles. The output is far greater in amount, however, than this could produce.

The explanations of the retention in pneumonia are similarly unsatisfactory. The best is that the salt is retained to maintain the isotonicity of the body fluids. But too much is retained, to accomplish this and even excessive amounts of salt taken by the mouth may fail to reappear.

II. Some New Illustrations of Aural Anatomy. DR. H. O. REIK.

A demonstration with the epidiascope of drawings by Messrs. E. A. Morrison and Kensey Toda.

NOTES AND NEWS.

Dr. John Auer is Associate of the Rockefeller Institute for Medical Research. Address: 13 W. 121 Street, New York City.

Dr. John M. Berry is Consulting Surgeon to the Leonard Hospital and Orthopedist to the Samaritan Hospital, Troy, N. Y. His address is The Caldwell, Troy, N. Y.

Dr. E. Bates Block has recently purchased the Piedmont Sanitarium, Ga., for medical, nervous and mental diseases.

Dr. Charles H. Bunting is Professor of Pathology, University of Wisconsin. Address: 1930 Monroe, Madison, Wis.

Dr. J. I. Butler is Assistant Surgeon to the Springfield Hospital, and Assistant Surgeon, House of Mercy. Address: 26 Maple Street, Springfield, Mass.

Dr. Benson A. Cohoe resides at 124 Western Avenue, West Toronto, Canada.

Dr. Ernest S. Cross has been Resident Physician to the Telfair Hospital, Savannah, Ga., during 1908.

Dr. Ernest C. Dickson is Assistant in Pathology and Bacteriology, Cooper Medical College, San Francisco, Cal.

Dr. S. A. Dodds is Pathologist to the Whitehead-Stokes Sanitarium, Salisbury, N. C.

Dr. Charles P. Emerson is Superintendent of the Clifton Springs Sanitarium, Clifton Springs, N. Y.

Dr. R. H. Follis is Associate in Surgery, The Johns Hopkins Hospital.

Dr. Henry Harris is Instructor of Principles and Practice of Medicine, Cooper Medical College; Visiting Physician to the California Women's Hospital; Visiting Physician to the Pacific Hebrew Orphan Asylum; Consulting Physician to Mt. Zion Hospital, and Chief Examiner of Columbia National Life Insurance Company. Address: 1204 Sutter Street, San Francisco, Cal.

Dr. C. W. Hennington resides at 303 Alexander Street, Rochester, N. Y.

Dr. Henry T. Hutchins is Assistant Out-Patient Surgeon and Resident Pathologist to the Free Hospital for Women, Brookline, Mass. Address: 483 Beacon Street, Boston.

Dr. Irving P. Lyon is Lecturer in Clinical Medicine and Librarian, Medical Department, University of Buffalo. Address: 531 Franklin Street, Buffalo, N. Y.

Dr. William G. MacCallum is Professor of Pathological Physiology and Lecturer on Forensic Medicine, The Johns Hopkins University.

Dr. Harry T. Marshall is Professor of Pathology, University of Virginia. Address: Charlottesville, Va.

Dr. E. M. Mason is State Pathologist, Alabama, and Pathologist to St. Margaret's Hospital. Address: 815 First National Bank Bldg., Montgomery, Ala.

Dr. Charles C. Norris is Instructor in Gynecology, University of Pennsylvania, Attending Physician to the Philadelphia Maternity Hospital, Assistant Gynecologist and Obstetrician to the Philadelphia General Hospital, Assistant Gynecologist, St. Vincent's Home, and Chief of Dispensary, Howard Hospital (Gynecology).

Dr. Charles D. Parfitt has been appointed Resident Consultant to the institutions of the National Sanitarium Association—the Muskoka Cottage Sanitarium and the Muskoka Free Hospital for Consumptives, Gravenhurst, Ontario.

Dr. William O. Pauli resides at 2915 Vine Street, North Cincinnati, Ohio.

Dr. Stephen Rushmore is Gynecologist to the Carnegie Hospital, Boston. Address: 483 Beacon Street, Boston, Mass.

Dr. J. Alison Scott is Adjunct Professor of Clinical Medicine, University of Pennsylvania, and Attending Physician to the Pennsylvania Hospital. Address: 1834 Pine Street, Philadelphia, Pa.

Dr. Charles N. Spratt is Clinical Instructor in Ophthalmology and Otology, University of Minnesota. Address: 305-310 Syndicate Arcade, Minneapolis, Minn.

Dr. Harvey B. Stone is Adjunct Professor of Surgery and Gynecology, the University of Virginia; Assistant Surgeon, the University of Virginia Hospital, and Director, the University of Virginia Dispensary. Address: Charlottesville, Va.

Dr. S. Strouse is Physician to The Hebrew Hospital Dispensary, and Visiting Physician to the Jewish Hospital for Consumptives, Baltimore. Address: 1704 Eutaw Place.

Dr. J. M. Taylor is Lecturer on Gynecology to the Nurses at St. Luke's Hospital Training School, Boise, Idaho.

Dr. Martin B. Tinker is Associate Professor of Surgery, Cornell University Medical College, Ithaca, N. Y., and Surgeon to the Clifton Springs Sanitarium, Clifton Springs, N. Y.

Dr. J. H. J. Upham is Professor of Medicine, Starling-Ohio Medical College, Visiting Physician to St. Francis Hospital, Consulting Physician of the Ohio State Penitentiary and Secretary of the Ohio State Medical Association. Address: Columbus, O.

Dr. Douglas Vanderhoof is Adjunct in Medicine and Lecturer on Physical Diagnosis in the Medical College of Virginia. Address: 603 East Grace Street, Richmond, Va.

Dr. Louis M. Warfield is Lecturer in Clinical Microscopy and Instructor in Medicine, Medical Department of Washington University; Physician to the Protestant Hospital, and Adjunct Attending Physician to the Martha Parsons Free Hospital for Children. Address: Metropolitan Building, St. Louis, Mo.

Dr. Harry I. Wiel's address is 519-520 Butler Building, San Francisco, Cal.

Dr. Otis B. Wight's address is 903 Corbett Building, Portland, Oregon.

Dr. J. Whitridge Williams, in addition to his positions on the Johns Hopkins Hospital Staff, is Gynecologist to the Union Protestant Infirmary, and Medical Adviser to St. Agnes Hospital, Baltimore

Dr. Paul G. Woolley is Associate Professor of Pathological Anatomy in the University of Nebraska College of Medicine, Omaha, Neb.

Dr. Hugh H. Young is Associate in Surgery to the Johns Hopkins Hospital.

INDEX TO VOLUMES 1-16 OF BULLETIN.

A subject and author index of the first sixteen volumes of the Johns Hopkins Hospital Bulletin is now ready. As the edition will be limited, it is desirable that orders be sent in as promptly as possible.

Price bound in cloth is fifty cents.

Orders should be addressed to the Johns Hopkins Press, Baltimore, Md.

NOTES ON NEW BOOKS.

State Commission in Lunacy, Nineteenth Annual Report, October 1, 1906, to September 30, 1907. ALBERT WARREN FERRIS, M. D., SHELDON T. VIELE, WILLIAM L. PARKHURST, Commissioners; T. E. MCGARR, Secretary. Transmitted to the Legislature, January 31, 1908. (*Albany: J. B. Lyon Company, State Printers, 1908.*)

This formidable volume of upwards of 1300 pages gives an interesting account of what New York has done for the care of her dependent insane during the past year. It contains the report of the State Commission in Lunacy proper with many accompanying documents, such as the formal annual reports of the State institutions under the charge of the commission with comparative statistics, verbatim reports of the proceedings at the quarterly meetings at Albany of the superintendents of institutions, the report of the director of the Pathological Institute, statistics as to the criminal insane, and detailed accounts of the visits of the committees of the State Charities Aid Association. It is evident that the work of the Commission in Lunacy of New York is no longer tentative and experimental, but has reached a definite stage of permanence with a settled policy and enduring traditions. It, therefore, seems not worth while for the reviewer to consider the abstract question as to the wisdom of a commission in lunacy with broad powers, but rather to inquire as to the character and value of the work which is accomplished. A careful reading of the volume under consideration must impress one with the conviction that the dependent insane of New York are to-day in much better condition than ever before in the history of the State. They are all gathered into organized hospitals under the care of trained experts for whose further training the State is constantly furnishing increased facilities; they are nursed and watched over to a greater degree each year by educated nurses; they have more varied means of occupation and better therapeutic resources; the institutions have become standardized and each one compares most favorably with the other; in other words, all the institutions of the State have been placed upon a higher plane of efficiency. Even if, as some critics declare, there is less individual initiative on the part of superintendents of hospitals under the Commission than formerly, there seems now a higher standard of general accomplishment, the credit for which must be given to the Commission.

The verbatim reports of the quarterly meetings at Albany indicate how widely the process of standardizing the hospitals has contributed to the education of their medical officers. In the volume there are papers and elaborate discussions upon subjects of vital interest as the "care of dotards in public hospitals," the "training of nurses," the "open-air treatment of insanity," the "care of the insane pending commitment," the "occupation and diversion of patients," and "the best method of increasing the usefulness of the annual report." The papers which presented these varied topics were painstakingly and conscientiously prepared and the discussions were of great value. The "care of dotards" seemed to present the most difficulties and the conclusions reached were not wholly clear. The latitude which prevailed in practice as to the method of dealing with dotards in the different institutions showed a spirit of liberality on the part of the Commission in Lunacy and a desire that each superintendent should be free to decide the question of admitting or rejecting them. The discussion of the statistical tables in the annual reports presented many valuable suggestions. It is evident, however, that no real progress can be made in determining the curability of insanity until such tables deal with persons and not with cases. If in these tables each person had his own number which designated and identified him in all subsequent admissions it would be possible to know what the ultimate termination of his disease was, no matter under what varying forms of apparent disease he might have entered the hospital.

It is most gratifying to perceive how highly the work of Dr. Adolf Meyer in promoting the training of medical officers in these hospitals is appreciated by reading the hearty encomiums which are paid him by his associates. It is matter of regret that space will not permit any adequate abstract of the contents of this bulky volume. All who are engaged in the treatment of the dependent insane should read and profit by it. The great bulk of the volume, however, renders it a difficult book to consult. A more detailed index would also be a convenience for the reader.

Modern Medicine. Its Theory and Practice, in Original Contributions by American and Foreign Authors. Vol. IV. Edited by WILLIAM OSLER, M. D., assisted by THOMAS MCCRAE, M. D. (*Philadelphia and New York: Lea and Febiger, 1908.*)

This volume, containing the articles upon diseases of the circulation, the blood, the spleen, thymus, and ductless glands, maintains the standard set by its predecessors. As might be expected from a list of contributors which numbers Doctors Abbott, Babcock, Blumer, Cabot, A. G. Gibson, Hoover, Lyon, McPhedran, Osler, Pratt, and Warthin, the articles are scholarly, and the literature dealt with by the writers is brought well up to date. The articles by Professor Osler—endocarditis, valvular heart diseases, and diseases of the arteries—written in his inimitable style, need no further comment. The notes upon pathological physiology by Dr. A. G. Gibson, though rather brief, constitute a feature which is not often found in works of this type, and form a valuable addition. The chapter by Dr. Maude Abbott on the congenital heart diseases is unusually complete; it is particularly striking from the presence of a number of illustrations, a feature which might have well been introduced in the other articles also.

The articles upon hæmatology and the ductless glands are concise and readable, although some notable omissions occur. For example, in the article on the treatment of leukæmia Dr. Cabot does not even mention the use of arsenic, confining himself entirely to the use of the X-rays which he seems to regard as almost specific. It is impossible to dwell at length upon the other articles, but they may be said to share the general excellence of those which have been referred to above.

Fourth Annual Report of the Henry Phipps Institute. For the Study, Treatment, and Prevention of Tuberculosis. Edited by JOSEPH WALSH, A. M., M. D. (*Philadelphia: Henry Phipps Institute, 1908.*)

The Fourth Annual Report of the Henry Phipps Institute consists, as have the three previous volumes, of statistical studies. An unusual amount of time and labor is spent in the making, the keeping, and the analysis of their exhaustive records. These are their pride, and only the initiated may assist in their preparation. Every effort is made to have the entries uniform and no labor spared in the checking and control of observations. Under such fostering care a staff of physicians has developed skilled in the taking of records and the results of their labor is the monument to which the Phipps Institute points after its four years of existence. In the present report are considered in great detail and with unusual care the varying features of 3733 cases of tuberculosis. The color, the race, the sex, the social condition, the height, the weight, the complexion, the color of eyes, the age, occupation, habits, economic condition, etc., etc., are arranged in tabular form and subjected to critical review. A splendid array of figures it is and one in search of statistics upon any feature bearing on tuberculosis will find a satisfactory account of it in this volume. The figures relating to the disease of the circulatory system are, how-

ever, very remarkable. In 2274 cases of pulmonary tuberculosis there were 18 cases of aortic stenosis, 7 of aortic insufficiency, 20 of mitral stenosis, 66 of mitral regurgitation, and 10 more cases with combined lesions. In other words, something over 5 per cent of the cases are affected with valvular heart disease. Most of the cases have mitral disease, and there is no evidence to show that patients with mitral disease are especially prone to tuberculosis. Indeed, some prominent clinicians have and do contend that they are relatively seldom attacked. For 5 per cent of any group of cases to display valvular disease of the heart is an anomalous feature, and one is forced to presume that the standards of diagnosis at the Phipps Institute are different from those which commonly obtain. It is merely suggested as a possibility that auscultatory phenomena have been given too much importance, and it is commonly known how very unreliable auscultation alone is in the diagnosis of valvular lesion. We would remark particularly that nearly 1 per cent of the cases have aortic stenosis and then comment with Broadbent how very rare true aortic stenosis is. This table certainly needs elucidation.

The other articles in the volume are reports from the various departments, and more detailed studies of special cases and of special organs as of the blood, the urine, bones and joints, lymph glands and skin, pleura, etc. It remains a regret of all interested in tuberculosis who look forward to the appearance of these reports that little or no experimental work is attempted. We know under what disadvantages the Phipps Institute is at present laboring, and we hope that conditions will soon improve so that the laboratory reports may occupy the place they should have in conjunction with the clinical work.

Thomas Linacre. By WILLIAM OSLER, M. D., F. R. S. (*Cambridge: University Press, 1908.*)

With the happy translation—as Dr. Osler terms it, and doubtless one whose name begins with a "Mac" would so consider it to go from an English to a Scotch university—of Donald Macalister from Cambridge to Glasgow University it was decided that the Linacre lectureship at Cambridge University, which had been held by him, should be changed to an annual lecture to be known as the Linacre lecture. It was a happy thought to invite the Regius Professor of Medicine at Oxford to deliver the first lecture, both because there are foundations established by Linacre at Oxford and at Cambridge, and because the lecturer has been for many years especially interested in Thomas Linacre. Very fitly he chose as the subject a review of the life and works of the founder of the lectureship. The main points in Linacre's life and the factors which influenced him are discussed; and it is pointed out that he was one of the first of the English students who went to Padua for his medical education. Of the influence of Linacre on the revival of learning in England, of the importance of his works, both as a physician and grammarian, Dr. Osler has given a delightful description. Interested in medicine throughout his life he found many other things in which to work, and as has been pointed out, Linacre is perhaps the original of the character in Browning's poem, "The Grammarian's Funeral." Perhaps the chapter on Linacre as a grammarian is the most interesting part of the work. The last chapter of the book gives an account of the Linacre foundations, their history and some notes of the principal men who have held the lectureships. It is rather a surprise to find among them the name of Matthew Prior, although there were several occasions when it was not possible to have the lectureship at Cambridge held by a medical man. The lecturer pays a graceful tribute to Donald Macalister in expressing the view that he could have undertaken the work of any of his fifty predecessors with a light heart. Those of us who know the present principal of Glasgow University will cordially agree with that. Doctor Osler points out that on the whole the Linacre foundations flourished better at Cambridge than at Oxford. There are reproductions of the portraits of Linacre and the title pages of a number of his works.

Altogether we have to thank Doctor Osler for giving us, in his own delightful style, another bit of medical history and the account of an important figure in the advance of learning in England.

The Law in General Practice. Some Chapters in Every-day Forensic Medicine. By STANLEY B. ATKINSON, M. A., M. B., *etc.* (*London: Henry Frowde*, and *Hodder and Stoughton, 1908.*) *Oxford Medical Publications.*

This book is better adapted for the English than the American practitioner, and will, therefore, find but a limited sale in this country. Medical law differs so greatly in many respects in the States from in Great Britain that a study of this work from the legal standpoint would not be very helpful to a doctor in this country. However, there is much advice in this treatise which would be useful to any member of the medical profession. The style of the author, like that of most legal writers, is rather dry to the ordinary reader, and some points are not made as clear as would be well to those ignorant of legal procedure. The following remark is distasteful: "It is not an uncommon pleasantry in operating theaters to feign to have forgotten which side of the patient had to be treated" (p. 118); as is also the term "wedding-ringless" (p. 146). It is a distinct pity that "brain-storm" (p. 173) should have crept into a serious work. It is doubtful whether indecent exposure is usually the result of "reflex acts of a desire to relieve an overful urinary bladder" (p. 172). The following division of insane patients whom a doctor is likely to be called upon to send to some institution is unsatisfactory: (1) those found wandering; (2) those who exhibit dangerous mental symptoms in their own homes; (3) the well-to-do insane (p. 182). More exact knowledge in science can hardly be said to narrow men's views, "for men's views narrow with progress of the 'scopes'" (p. 223); theories may be altered and dropped, but all true knowledge enlarges our abilities to look further ahead. 'Scopes' is a word for which there is no excuse, except in the language of the uneducated. "'Expectancy of life' is mostly the clever conjecture of actuaries" (p. 227). This is a too slurring remark. The statement that "the presence of gonorrhœa cannot be established by microscopical evidence" is not readily intelligible, unless the author means established as convicting evidence in court, but in any case it needs further explanation. In spite of this criticism of certain aspects of the work, it is one that is worthy of a place in a medical library. R. N.

Manuel des Gardes-Malades dans les Hôpitaux pour Maladies Mentales. Par M. LE DR. JULES MOBD, Médecin-Directeur de l'Asile d'Aliénées de l'Etat Mons. (*Bruges: Houdmont-Bricin et Fils, 1907.*)

This excellent little manual should be translated into English for the use of nurses who desire to care for the insane. There is much in it which is applicable to nurses of other classes of patients, but this rather increases than detracts from its value as a nursing manual. It is a small volume of about 200 pages, clearly and sympathetically written by a doctor who recognizes what is most important in the care of the insane. Not alone in America are distinct advances being made in the art of nursing, but abroad as well, and one of the best signs of the time is the evidence that the Catholic sisterhoods are recognizing the necessity of training their members in as equally proficient ways as are lay nurses in Protestant schools. It is worthy of remark that the Superioress of the Sisters of Charity paid the printing expenses of copies of this manual for the Sisters engaged in nursing the insane in their asylums, and her act was one of generosity

and intelligent recognition not only of the needs of the Sisters, but also of their patients. Fortunately for both, no better book could have been selected for this wide work, and the author may well feel an honest pride in having written a treatise which will doubtless bring more relief to a large body of sufferers than all the other methods of relief employed in trying to cure them.

R. N.

Methodus Medendi. A Sketch of the Development of Therapeutics. By SIR WILLIAM HENRY ALLCHIN. (*London: H. K. Lewis, 1908.*)

In this work, reprinted from the Medical Magazine, Sir William Henry Allchin has given a most interesting sketch of the history of the treatment of disease, beginning with a discussion of the methods employed in antiquity, many of them based on superstition. He then passes to a discussion of empirical methods and treatment by drugs. The third section considers the rational treatment of disease and scientific therapeutics. It is not possible to review this work in any detail because there are so many interesting references that it would be difficult to choose any part for special comment. The writer has consulted a large number of works from which he has chosen many illuminating quotations; thus we find him taking toll from such divers authors as Robert Burton and Herbert Spencer. Consideration of the number of remedies which have been employed even in comparatively recent times tends to give one a spirit of therapeutic humility and thankfulness. Thus there is an interesting note of a preparation in the London Pharmacopœia for 1639, known as *Antidotus magna Matthioli adversus venena et pestem*, which contained 130 ingredients, some of them being compounds.

Altogether this is a monograph which may be cordially recommended to all who have any interest in the history of medicine. We should like to thank the author for the pleasure his work has given us and for the amount of information and the number of side-lights on the progress of therapeutics which he has gathered together.

Sprue and Its Treatment. By W. CARNEGIE BROWN, M. D., M. R. C. P. Price, 6 shillings. (*London: John Bale, Sons & Danielsson, 1908.*)

What chance Doctor Brown has had for the study of this disease is not evident, so that it is impossible to decide whether the book is the result of personal experience in the observation of cases in the East, or merely a compilation of the work of others. As it is a disease only seen by chance in England, such a work can at best be based on the study of a very few cases, if the author has not lived in the East, and, therefore, its importance as an original contribution, is limited. The "Treatment" occupies more than half the volume, and it is with the purpose of making the "treatment" the "object of this contribution" that so much space is given to it. It must be left to our confrères where sprue prevails to pass on the merits of the treatment advocated. The author has written his treatise in a clear style, with abundant reference to authorities, so that doubtless the book will be serviceable to practitioners in the East.

Progressive Medicine, Vol. III, September, 1908. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, 285 pages, with 30 engravings. Per annum, in four cloth-bound volumes, $9.00; in paper binding, $6.00, carriage paid to any address. (*Philadelphia and New York: Lea & Febiger.*)

The volume contains chapters on "Diseases of the Thorax and its Viscera," by Ewart; on "Dermatology and Syphilis," by Gottheil; on "Obstetrics," by Davis, and on "Diseases of the Nervous System," by Spiller. It is furnished with an index. The authors are all men well known for their work along these special lines, so that each review may be considered to cover well the branch dealt with, and to do it in a righteously conservative manner. It is no easy task to co-ordinate all the literature which appears in the course of a few months on any leading medical subject, and the success of this publication is largely due to the skill which is shown by the contributors in abstracting the more important papers, and presenting a clear résumé of the topic in question. No student will fall far behind the times if he reads these volumes carefully, and takes the trouble to look up some of the original articles referred to, for after all one must refer to the sources, if one wants to be thorough in one's knowledge. "Progressive Medicine" is more than a reference handbook, and for many invaluable.

The Pancreas: Its Surgery and Pathology. By A. W. MAYO ROBSON, D. Sc. (Leeds), F. R. C. S. (Eng.) of London, and P. J. CAMMIDGE, M. D. (Eng.) D. P. H. (Camb.), of London. Octavo volume of 546 pages, fully illustrated. Cost, $5.00 net. (*Philadelphia and London: W. B. Saunders Company, 1907.*)

This is one of the most important recent works on the pancreas.

The chapter on the comparative anatomy of that organ is very interesting, and that on its anatomy is very full. Then brief mention is made of the embryology of the pancreas. Chapter IV on "Anatomical Abnormalities" is especially good. Chapter V on "Surgical Anatomy" is rather disappointing, but that on histology is better. The chapter on the physiology of the gland seems very complete, that on pathology is fair, that on chemical pathology seems especially complete. Of course, in this last the pancreatic reaction receives very full treatment. The chapter on diabetes seems to be a review of literature with frequent mention of the writer's experience. Then follow 200 pages in which are discussed the symptomatology, diagnosis, and treatment of the various diseases of the pancreas with especial reference to their surgical treatment.

The book is a large one, the subjects are rather voluminously treated, the cuts are only fair, the printing is good. One misses a certain conciseness of statement, a critical treatment of the cases mentioned and the literature quoted. One wonders if the importance attached to the pancreatic reaction is in any way a standard of the accuracy of statement concerning other pathological and chemical work reported. As a review of recent literature, the book is a valuable aid to students of this subject.

The Writings of Sir William Broadbent. Edited by WALTER BROADBENT, M. D., M. R. C. P. (*London: Henry Frowde, and Hodder & Stoughton, 1908.*) *Oxford Medical Publications.*

This is a volume containing only a "selection" of Sir William Broadbent's medical writings, but one full of meat and worthy of a prominent place on the book-shelves of any doctor. The writer was for many years one of London's most highly-esteemed and successful practitioners, and in these papers one finds what one is ever in search for, the results of a broad experience, and the learning of a wise man. Here are set forth the author's views on many features of heart, lung, and kidney diseases, as well as on treatment of various troubles, and there is a long series of papers on neurological subjects. As Broadbent wrote no comprehensive treatise of medicine, this collection of his articles is both interesting and valuable; and it is fortunate for the profession that his son has edited them. The English clinicians surpass all others in their ability to present old subjects in a clear and fresh manner, and always succeed in giving vivid pictures in relating case-histories. This ability is manifest in Sir William Broadbent's writings; each paper, though oftentimes brief, is complete in

itself, and is delightful reading. There is ever the feeling in reading them that the author was perfect master of his subject. The following quotation (p. 301) is well worth pondering over: "We are all a little like the profane Yankee who acknowledged that man was a smart piece of work, but thought that if he had been present at the making of him, he could have suggested a 'wrinkle or two.' A distinguished medical authority would make him without tonsils, and a great anatomist thinks the vermiform appendix a useless source of danger. I will not in like manner impute clumsiness to Nature in requiring a different tract and apparatus for each modification of sensation; *I think it is the interpretation which is clumsy*" (the italics are the reviewer's). This was written as long ago as 1876, and the same misinterpretations of Nature are prevalent to-day. R. N.

The Ready Reference Handbook of Diseases of the Skin. By GEORGE THOMAS JACKSON, M. D. Sixth edition, revised. 737 pages. (*New York: Lea & Febiger, 1908.*)

This new edition shows 60 pages, 8 illustrations, and one colored plate, together with some change of the text, added to the last edition.

The new articles include black tongue, dermatitis verrucosa or vegetans, keratosis follicularis contagiosa, keratosis senilis, lichen obtusus, melung, pseudopelade, and sportotrichosis hypodermica.

The diseases of the skin are still arranged in alphabetical order. At least one error of omission shows some carelessnes of the proofreader, and makes necessary a reference to the appendix. After referring the reader several times to leucodermia, one looks for it in vain under the alphabetical list.

The illustrations are only fair.

Russell Sage Foundation. The Campaign against Tuberculosis in the United States. Price, $1.00. (*New York: Charities Publication Committee, 1908.*)

This most useful publication is practically a directory of all institutions dealing with tuberculosis in the United States and Canada; of course, private institutions of an undesirable character are omitted. The sanatoria are arranged in alphabetical order of the States, so that it is easy to see just what means for fighting tuberculosis exist in any State; then come similarly-arranged lists of hospitals for the insane and penal institutions making special provision for their tuberculous patients and inmates, followed by the dispensaries and clinics for the special treatment of tuberculosis, the tuberculosis classes in the United States, and associations and committees for the study and prevention of tuberculosis in the United States and Canada. In addition to these lists there have been included in the volume typical forms of the organization (constitution and by-laws) of associations in the United States, and the legislation affecting tuberculosis in the United States, including an outline of the activities of State and local boards of health. This mass of information which has been compiled by Mr. Philip P. Jacobs, under the direction of The National Association for the Study and Prevention of Tuberculosis, is of incalculable service to all seriously interested in the campaign against this disease. It is a pity that it did not appear in time to be presented as a document at the International Congress on Tuberculosis which has just met in Washington. The compilation of such statistics is a worthy use of the "Foundation," as it is of distinct social service. It is certain that the book will be widely welcomed.

Biennial Report of the Board of Health of the City of New Orleans, 1906-1907. (*New Orleans: Brandao Printing Company, 1908.*)

The work done by the Board of Health of New Orleans is satisfactory and as good as that done in many of our larger cities. The necessary work that has yet to be done can only be accomplished with the help of the medical profession and that of the public. That more rapid progress in sanitation is not made is largely due to the oppositon of the doctors, who, as a body, must be held responsible for the slowness of our progress in these matters. Measles is not classified as one of the diseases in New Orleans that must be reported to the Board of Health, and for this reason the mortality rates are higher there than they ought to be. Were the doctors eager that measles should be reported, it would soon be done, and the city would thereby benefit. The help of the citizens is to be secured through the instruction they receive by the leading members of the profession, but if the doctors are indifferent and negligent in their duties, it is clearly not to be wondered at that the citizens alone do not take the necessary steps to improve matters. On the other hand, too stringent laws on the part of the Board of Health will arouse much antagonism, and it is not plain why in all cases of infectious diseases "public or church funerals are forbidden," since if proper precautions are taken, there could be no possibility of spreading the disease, from which the patient died, by such religious services.

The following paragraph from the report (p. 68) suggests that the Board of Health did not fully realize its responsibilities. It is stated that "in the cause of a discussion touching the advisability of creating a milk commission for the bacterial count of milk and the grading and certification of special milk and dairies, the startling fact was brought out that Boston, with its bacterial count, has an infant mortality higher than that of New Orleans since 1900." This certainly does not disprove the value of bacterial counts, and such meager comparative statistics are worthless. No one, who can reason for himself, can fail to recognize that milk with few bacteria is a better food to drink than milk polluted by many disease-producing organisms.

In other respects the report is deserving of commendation.

R. N.

Pain: Its Causation and Diagnostic Significance in Internal Diseases. By DR. RUDOLPH SCHMIDT. Translated and edited by KARL M. VOGEL, M. D., and HANS ZINSSER, A. M., M. D. (*Philadelphia and London: J. B. Lippincott Company, 1908.*)

In bedside diagnosis the patient's symptoms are of the greatest importance and likewise cause the greatest difficulty in interpretation. Of all subjective symptoms, pain is the most common and the most complex in its manifestations. The patient's interpretation of his symptoms, which depends so much on his individual reaction, necessarily influences the physician in studying the underlying condition, and consequently there is probably nothing in medical practice which causes more divergence of opinion than the diagnosis of the cause of pain.

The book under review aims to assist in this analysis and is a most thorough presentation of a diffcult subject. The first four chapters, which in certain respects are the most valuable in the book, deal entirely with the necessity of systematic study of painful sensations, especially with regard to topography, time, intensity, quality, simulation, modifying factors, and all accompanying manifestations. The discussion of modifying factors is of great importance and is well presented. The thoroughness of the book is well seen in the study of headaches, to which 15 pages are devoted. The nervous system, the organs of motion, the digestive tract, the cardio-respiratory and urinary system all receive careful attention. Of special interest are the discussions of pain in gastric ulcer and in appendicitis. Throughout the whole book the author attempts to reveal the underlying anatomical and physiological basis of pain. The book closes with an extra chapter added by the American translators, dealing with Head's researches on referred pain and an excellent series of diagrams illustrating the commoner seats of referred pain.

The author accomplishes his aim well, and the book is valuable for detailed study and reference. Yet it has its limitations. We must always remember that in practice we are not treating symptoms or diseases, but that we are dealing with human beings; that while we must analyze every sign and symptom carefully, it is the study of the composite picture which produces the best results. Naturally in a book with so deep an analysis of a single symptom, the general point of view is slightly neglected, even though the author may to a certain extent emphasize the importance of this broader view. S. S.

The Baby—Its Care and Development; for the Use of Mothers. By LE GRAND KERR, M. D., *etc.* Illustrated. Price, $1.00. (*Brooklyn, New York: Albert T. Huntington, 1908.*)

This small volume may serve many a mother well, and, therefore, may be recommended to them. There is no lack of these manuals, some better, some worse. Dr. Kerr's lacks any marked quality of distinction to make it appeal to the medical profession, and as his style is loose and at times ungrammatical, the book can only be endorsed for its sense, and its power of not doing harm. R. N.

The Natural History of Cancer, with Special Reference to its Causation and Prevention. By W. ROGER WILLIAMS, F. R. C. S. (*New York: William Wood & Co., 1908.*)

"Moreover, since the cure of cancer altogether transcends present experience, I have in this work specially endeavored to elucidate the causation and prevention of the disease rather than its cure. . . . . To this end I have devised and applied a new method of cancer research—which may be called synthetic—whereby I have shown that there are modes of life, various habits, and so forth, which tend to prevent the incidence of cancer almost entirely in healthy stocks, and greatly to reduce its ravages, even among those hereditarily predisposed." In this attempt the author has produced a work of nearly 500 large pages, in which he has compiled a great amount of statistics; but without a careful perusal of the book it is quite impossible to reach his conclusions, as he has not summed them up in a final chapter. Conclusions are attached to some of the 23 chapters, but not to all. Thus, the explanation of the causation is not clearly set before the reader, nor is it likely that the causation can be explained by any such statistical study, where conclusions can only be drawn from a balancing of opposing figures. Little of the work presented by the writer is new, and the value of his book rests largely in the collection of data on cancer, otherwise not readily obtainable except in separate volumes. It is not the study of a profound student, and will not be of especial service to those investigating the causation of cancer with true scientific spirit.

The Cure of Rupture by Paraffin Injections. By CHARLES C. MILLER, M. D. (*Chicago: Oak Printing Company, 1908.*)

The title of this small volume exactly describes its contents. If a surgeon wishes to try this method of operation, he will find it well described by the author, who is an enthusiast in advocacy of this procedure.

BOOKS RECEIVED.

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The Cure of Rupture by Paraffin Injections. By Charles C. Miller, M. D. 1908. 16mo. 81 pages. Oak Printing Co., Chicago.

Surgery of the Ureter. An Historical Review (1585-1905). By Benjamin Merrill Ricketts, Ph. B., M. D., LL. D. 1908. 12mo. 244 pages. Cincinnati, Ohio.

The Natural History of Cancer. With Special Reference to its Causation and Prevention. By W. Roger Williams. 1908. 8vo. 519 pages. William Wood and Company, New York.

Scientific Memoirs. New Series No. 33. By Officers of the Medical and Sanitary Departments of the Government of India. *The Production of Alkali in Liquid Media by the Bacillus Pestis.* By Lieut.-Colonel W. B. Bannerman, M. D., B. Sc., I. M. S. 1908. 4to. 12 pages. Superintendent Government Printing, Calcutta, India.

Scientific Memoirs. New Series No. 34. By Officers of the Medical and Sanitary Departments of the Government of India. *Standards of the Constituents of the Urine and Blood and the Bearing of the Metabolism of Bengalis on the Problems of Nutrition.* By Captain D. McCay, M. B., B. Ch., B. A. O., I. M. S. 1908. 4to. 67 pages. Superintendent Government Printing, Calcutta, India.

The Campaign Against Tuberculosis in the United States. Including a Directory of Institutions Dealing with Tuberculosis in the United States and Canada. Compiled under the Direction of the National Association for the Study and Prevention of Tuberculosis. By Philip P. Jacobs. 1908. 8vo. 467 pages. Charities Publication Committee, New York.

Points of Practice in Maladies of the Heart. Lumleian Lectures at the Royal College of Physicians of London. By James Sawyer, Knt., M. D. (Lond.), F. R. C. P., F. R. S. (Ed.), F. S. A. 1908. 12mo. 96 pages. Cornish Brothers, Ltd., Birmingham.

An Alabama Student and Other Biographical Essays. By William Osler, M. D., F. R. S. 1908. 8vo. 334 pages. Oxford University Press, American Branch, New York. Henry Frowde, London.

Economic Zoölogy. An Introductory Text-Book in Zoölogy. With Special Reference to its Applications in Agriculture, Commerce and Medicine. By Herbert Osborn, M. Sc. 1908. 12mo. 490 pages. The Macmillan Company, New York.

Transactions of the Society of Tropical Medicine and Hygiene. 1907-1908. 8vo. 303 pages. 1908. The Bedford Press, London.

Report on the Prevention of Malaria in Mauritius. By Ronald Ross, D. P. H., F. R. C. S., D. Sc., LL. D., F. R. S., C. B. 1908. 4to. 202 pages. Waterlow and Sons, London.

High-Frequency Currents. By Frederick Finch Strong, M. D. With 183 illustrations in the text. [1908.] 8vo. 289 pages. Rebman Company, New York.

Introduction à l'Étude Clinique et à la Pratique des Accouchements. Anatomie. Présentations et Positions. Mécanisme. Toucher. Manoeuvres. Extraction du Siège. Version. Forceps. Par Le Professeur L. H. Farabeuf et Docteur Henri Varnier. Préface du Professeur A. Pinard. Dessins démonstratifs de L. H. F., donnant avec les répétitions nécessaires 375 figures dont plusieurs nouvelles. Nouvelle édition revue et augmentée. [1909.] 4to. 488 pages. Georges Steinheil, Paris.

Intestinal Auto-Intoxication. By A. Combe, M. D. Together with an Appendix on the Lactic Ferments with Particular Reference to their Application in Intestinal Therapeutics, by Albert Fournier. Only Authorized English Adaptation, by William Gaynor States, M. D. With eighteen figures in the text, four of which are colored. [1908.] 8vo. 461 pages. Rebman Company, New York.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles. By Leading Members of the Medical Profession Throughout the World. Edited by W. T. Longcope, M. D. Eighteenth Series. Volume III. 1908. 8vo. 298 pages. J. B. Lippincott Company. Philadelphia and London.

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Green's Encyclopedia and Dictionary of Medicine and Surgery. Vol. VIII. Physiology-Rhinolalia. Vol. IX. Rhinoliths-Thermotaxis. 1908. 4to. W. T. Keener & Co., Chicago.

A Manual of Diseases of the Nose and Throat. By Cornelius Godfrey Coakley, A. M., M. D. Fourth edition, revised and enlarged. Illustrated with 126 engravings and 7 colored plates. 1908. 12mo. 604 pages. Lea & Febiger, New York and Philadelphia.

Hygiene for Nurses. By Isabel McIsaac. 1908. 12mo. 208 pages. The Macmillan Company, New York.

Has Surgical Treatment Lessened the Mortality from Appendicitis? By Frank P. Vale, M. D. 1908. 8vo. 165 pages. Fisk Fund Prize Dissertation. No. 51. Providence.

Clinical Diagnosis. A Text-Book of Clinical Microscopy and Clinical Chemistry for Medical Students, Laboratory Workers and Practitioners of Medicine. By Charles Phillips Emerson, A. B., M. D. Second edition. 1908. 8vo. 686 pages. J. B. Lippincott Company, Philadelphia and London.

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